CARLSON McCAIN

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April 27, 2021

Ms. Diana Trussell
North Dakota Dept. of Environmental Quality
Division of Waste Management
918 East Divide Avenue
Bismarck, ND 58501-1947

RE: DB Waste
Response to NOV and Request for Permit Modification

Dear Ms. Trussell:

On behalf of DB Waste, LLC, Carlson McCain is submitting the following information in response to the Notice of Violation (NOV) issued on March 11, 2021. As part of this response, DB Waste is submitting a request for a permit modification. This permit modification includes revised operating and record keeping plans, a request to revise certain permit revisions, a revision to the waste disposal area approved in 2015, and a final cover evaluation and closure plan of the existing facility. DB Waste continues to revise and improve their operating and record keeping procedures and believes that this NOV response and permit modification reflects DB Waste's commitment to operating their inert facility in accordance with North Dakota Administrative Code regulating solid waste facilities.

Response to NOV Alleged Violations

Item 26: "Respondent has an excessively large disposal area and a large noncertified closed area."

DB Waste has diligently worked to reduce the size of the active disposal area since November 2020. Soil cover has been placed on the non-active area(s). Sequential development of disposal areas results in area(s) that are not filled to final grades and have additional disposal capacity but are not formally closed. These areas are covered with at least two feet of soil (intermediate cover) and will be used for further disposal as waste is brought to final grades.

DB Waste understands the need to keep the open area(s) as small as possible. However, the permit conditions also require the waste slopes to be no steeper than 4:1. This requirement results in larger open areas as a matter of operations. As the height of the disposal area increases, the toe of the disposal area lengthens, resulting in a larger open area(s). There appears to be some disparity between the two requirements, and we request the Solid Waste staff review the relation and resulting conflicting factors of the two requirements. This is further discussed in following sections.

In conjunction with Division of Solid Waste staff, we have determined that there are no formal records that indicate that any area(s) of the existing facility (since 1993) were certified as closed. DB Waste is proposing a formal closure procedure that is discussed and outlined as part of this submittal (see Closure Plan).

Item 27: "The waste in the disposal area is insufficiently spread, compacted, and covered on a periodic basis."

This is simply an operation procedure and landfill operators have been instructed on the proper procedures for spreading and compacting waste. We consider this item resolved.

Item 28: "Respondent has slopes in the disposal area and a portion of the closed landfill area that are steeper than allowed."

The slope(s) along the north side of the working face are not waste slopes or final cover. This slope is used to maximize airspace in the current cell to delay the need for another disposal cell and thus minimize the amount of open acreage of the Facility. The surface has remained stable at a 1.5H:1V slope, no major sloughing or erosion issues have been observed.

The working face slope exceeds the Facility's final cover slope of 25% due to regulation NDAC 33.1-20-04.1-09(4)(b)(3) being interpreted as only pertaining to the ultimate final cover slopes. DB Waste plans to install final and intermediate cover on as much of the landfill as possible in 2021, which requires a steep working face slope to allow for the largest area possible to be brought to final grade.

A 25% slope on the working face would significantly reduce the disposal volume of the current, and future cells. It would also reduce the amount of area that can be brought to final grade. These two issues would significantly hinder efforts to minimize landfill open area. Due to the large volume of incoming waste at the Facility, a steep working face is required to extend the life of each disposal cell while also minimizing open area.

Carlson McCain prepared a slope analysis of the closed areas that shows that all except a half-acre of the closed site meets the 4:1 slope requirement (provided in submittal dated October 14, 2020. This area was determined to be a 3.5:1 slope and is further discussed in the Closure Plan included in this submittal.

Item 29: "Respondent has windblow(n) debris outside of the disposal area."

Windblown debris is unfortunately inevitable in our North Dakota landscape. DB Waste is not the only disposal facility where windblow debris has been noted in inspection reports. A review of inspection reports of other facilities, and recent photographs of other facilities provided to the Division of Solid Waste, solidifies that fact.

To address this issue at the DB Waste facility, DB Waste has recently purchased 10 litter control panels. These panels are metal framed (24'L x 12'H x 8'W) with wire mesh to catch windblown debris. These will be placed on the downwind side of the working face each day to help control debris from being blown outside of the working face. A receipt for these panels is included as an attachment to this letter. In addition, the DB Waste Plan of Operation states that windblown debris will be collected by site personnel, as needed.

Item 30: "Respondent has not provided documentation of training."

DB Waste maintains that site personnel have attended training although there are no records by either DB Waste or the Solid Waste Division. DB Waste personnel attended the Landfill Operator Training Course provided by the Solid Waste Division on January 26, 2021. Those attending, and passing the final exam, are George Schick, David Barth, and Lee Fergel.

Item 31: "Respondent has not kept the facility's operating record at the facility."

This is an oversight by DB Waste. The facility permit, Plan of Operation, inspection logs, etc. will be maintained at both the facility and the business office. We consider this matter resolved.

Request for Permit Modification

A request for a Permit Modification is included as part of the NOV response. DB Waste has updated and revised the Plan of Operation, Site Safety Plan, and included a Closure Plan. In addition, after review of the current facility permit (Permit #0163) we are including the following items for discussion and clarification.

1. The current permit does not explicitly state that lime sludge is an acceptable waste. This appears to be an oversight during permit renewal in 2015, as it is included in the 2003 permit. We request that lime sludge be added back into the permit language.
2. DB Waste has started to keep daily inspection logs of landfill operation (included in the Plan of Operation). The inspection logs will note what activities occurred at the landfill that day, how much waste was accepted, etc.
3. A yearly topographic survey will be performed and submitted with the annual report.
4. As the City of Bismarck and the surrounding area continues to grow, so does the need for waste disposal. Waste intake at the DB waste facility has increased substantially in the last few years. As a result, DB Waste requests that the site intake level be increased to 220 tons/day. We also request an expedited review of the permit modification request. This will help to provide a seamless transition from the current working area to a new disposal area without restricting waste intake or shutdowns.
5. DB Waste recognizes that items noted in the NOV and the permit modification require additional operators and equipment to successfully operate and maintain the facility. DB Waste has made a substantial investment in equipment for operation including the purchase of another compactor. The equipment on site currently includes the following:

    - Caterpillar 826C Compactor
    - Caterpillar 826C Compactor
    - Caterpillar Scraper 627B
    - Caterpillar Scraper 625E
    - Caterpillar Dozer
    - Komatsu Dozer
    - Caterpillar Excavator
    - Caterpillar Excavator
    - Komatsu Excavator
    - 6x6 Komatsu Haul Truck
    - 6x6 Komatsu Haul Truck
    - John Deer Loader
    - 856 Tractor
    - 1 Spare Caterpillar Bucket Attachment
    - Hesston Swather

DB Waste is committed to operating a facility in compliance in accordance with the applicable regulations and permit conditions. DB Waste continues to improve and revise their operating and record keeping procedures. We hope that this response indicates a good faith effort to comply with the regulations and work with the Division of Solid Waste to resolve any outstanding issues. Please contact Dave Barth at 701-319-077 if you have any questions or need additional information.

Sincerely,

Todd Hartleben
Principal Engineer

Attachment: Glenn's Welding Receipt

R:\Templates 2020\Letterhead_Bismarck multiple pages.docx

GLENN'S WELDING & TRAILER SUPPLIES, INC.

121 EASTDALE DRIVE
BISMARCK, ND 58501

Invoice

Date	Invoice #
4/13/2021	34187

Bill To	Ship To
DB Waste 311 S 7th Street Bismarck ND 58501	DB Waste 311 S 7th Street Bismarck, ND 58501

P.O. Number	Terms	Rep	Ship	Via	F.O.B.	Project
	Net 30		4/13/2021			

Quantity	Item Code	Description	Price Each	Amount
10	Taxable Parts	24'L x 12' H x 8' W Litter Control Panels Ordered 4-9-21	3,000.00	30,000.00T
		Sales Tax	7.00%	2,100.00

Total $32,100.00

APPLICTION FOR A SOLID WASTE MANAGEMENT FACILITY PERMIT MODIFICATION

D.B. Waste, LLC
Burleigh County, North Dakota
Permit #0163

Prepared for:

D.B. Waste, LLC
311 South 7th St.
Bismarck, ND 58504

April 27, 2001

CARLSON McCAIN

3831 LOCKPORT STREET, SUITE C
BISMARCK, ND 58503

TEL 701.255.1475
FAX 701.255.1477

CARLSONMCCAIN.COM

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APPLICATION FOR A SOLID WASTE MANAGEMENT FACILITY PERMIT

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WASTE MANAGEMENT
SFN 19269 (6-2019)

1. GENERAL INFORMATION

Facility Name	Permit Number	Application Date	Telephone Number
DB Waste, LLC	0163	04/27/2021	701-222-3108

Physical Address	City	State	ZIP Code
14108 NW 34th St	Bismarck	ND	58503

Mailing Address	City	State	ZIP Code
311 South 7th St	Bismarck	ND	58501

Geographic Location	Section	Township	Range	County
	11&12	140N	81W	Burleigh

Latitude and Longitude (degrees, minutes, and seconds)
46º57'43"N 100º50'54"W

ID Number Assigned to Organization by the ND Secretary of State	State under which your organization is organized	Is registration with the Secretary of State required? (701) 328-4284
18,460,500	North Dakota	☑ No ☐ Yes

2. FACILITY TYPE

Application for What Type of Facility

- ☑ Inert Waste Landfill
- ☐ Municipal Waste Landfill
- ☐ Industrial Waste Landfill
- ☐ Special Waste Landfill
- ☐ Surface Impoundment
- ☐ Land Treatment Facility
- ☐ Solid Waste Processing
- ☐ Treatment or Resource Recovery Facilities
- ☐ Transfer Station
- ☐ Putrescible Waste
- ☐ Other Waste: _____
- ☐ Waste Pile (for example, tire piles more than 800 tires; yard waste compost piles serving more than 10,000 people)
- ☐ Other (Specify)_____

3. APPLICANT INFORMATION

Name of Applicant	Telephone Number	Fax Number
DB Waste, LLC	701-222-3108	

Address	City	State	ZIP Code
311 South 7th St	Bismarck	ND	58501

Is Applicant a Political Subdivision? ☑ No ☐ Yes

Is Applicant a Private Entity, Partnership, Corporation, etc.? ☐ No ☑ Yes

If the applicant is not a political subdivision in the state of North Dakota, please enclose appropriate information to describe any sole ownership, partnership, corporation, etc. Please include a description of the major stockholders of any corporate entity, the membership of the board of directors, a copy of the articles of incorporation, and any other information necessary to describe the legal status of the applicant. **Is this information enclosed?** ☐ No ☑ Yes

4. Surveyed Land Description: The applicant must provide a formal surveyed description of the proposed facility signed by a Registered Land Surveyor in the state of North Dakota and formally identify the facility boundaries. The applicant must demonstrate that he either owns the property and has legal access to it or show that he has a formal lease or rental agreement signed by the property owner showing approval and access to use the site as a solid waste facility.

Is Survey Description of Property Attached?	Name of Property Owner	Telephone Number
☐ No ☑ Yes	DB Waste, LLC	701-222-3108

Address	City	State	ZIP Code
311 South 7th St	Bismarck	ND	58501

Is a Certified Copy of the Deed Showing Property Ownership Enclosed? ☐ No ☑ Yes

If the property is not owned by the operator, is a copy of the lease, rental agreement, or other documentation signed by the property owner showing approval to use the site as a solid waste facility enclosed? ☐ No ☐ Yes

5. Easements or Encumbrances: A description of any easements around the property must be provided. This would include a description and a copy of any above ground or underground pipeline or transmission line easements, right-of-way easements, wetland easements, etc. The location of all such facilities and easements must be clearly identified on appropriate maps and legal descriptions attached to this application.

Does the applicant have clear and unencumbered access to the property to be used as a solid waste management facility?	Is information on any easements or access stipulations enclosed with this application?
☐ No ☑ Yes	☐ No ☑ Yes
Total acreage of proposed site	**Acreage usable for solid waste management activities as described in plans**
395.9 acres	297 acre zoned disposal area

6. General Site Information: To help the Department assess the suitability of the facility, general site information and maps must be provided with the application. At a minimum, the following information with the proposed facilities clearly defined should be enclosed with the application.

Topographic map of the area (USGS)	Map depicting area drainage and surface water flow patterns	Aerial photographs of the site	County road map of the area
☐ No ☑ Yes	☐ No ☑ Yes	☐ No ☑ Yes	☐ No ☑ Yes

Land ownership map of the area (county atlas)	Other Information
☐ No ☑ Yes	

7. Preapplication: For new or lateral expansion of land treatment units, surface impoundments closed with waste in place, municipal waste landfills, industrial waste landfills, and special waste landfills, has a preapplication assessment of the proposed site been approved? ☑ No ☐ Yes

8. Facility Access and Hauling: Please enclose any maps and supporting narrative identifying the suitability and adequacy of roads and bridges used as access routes to support loaded vehicles. Also indicate the modes of transportation and the waste haulers. Is this information enclosed? ☐ No ☑ Yes

9. Compliance History: Please enclose an accurate description of the compliance history of the permit applicant. Include any identified violations of the North Dakota Solid Waste Management Rules and/or any violations of state or federal rules at any other facilities or through any activities engaged in by the applicant. Is this information enclosed? ☐ No ☑ Yes

10. Waste Information: The application must include a description of the nature and quantity of materials or wastes proposed to be handled, processed, stored, or disposed during the period of the permit along with an identification of the generators (industries, businesses, municipalities, individuals, and populations) to be served by the proposed facility. As necessary, waste characterization and waste acceptance information must be provided.

11. Disposal, Recycling, Treatment, or Resource Recovery: For a transfer station, solid waste processing, treatment, or resource recovery facility, or a waste pile, the applicant must identify the end use, the location and/or the facility to which the waste will eventually be transferred. The applicant must demonstrate that all solid waste, recycled material, residues, and leachate will be managed at a state approved/permitted solid waste facility or at a facility that is in compliance with the regulations of the state, tribal, or federal agency having jurisdiction. Is this information enclosed? ☐ No ☑ Yes

12. Compliance with Rules: Permit applicants must include all appropriate information necessary to show how the facility will be in compliance with all state and federal rules and regulations. Appropriate sections of the North Dakota Solid Waste Management Rules that must be addressed include, but are not necessarily limited to, the following:

Chapter 33.1-20-01.1 General Provisions. Is this information enclosed? ☐ No ☑ Yes	Chapter 33.1-20-02.1 Permit Provisions and Procedures. Is this information enclosed? ☐ No ☑ Yes
Chapter 33.1-20-03.1 Permit Application Provisions. Is this information enclosed? ☐ No ☑ Yes	Date the affidavit from the official county newspaper will be submitted to the Department certifying that the two public notices have been published (see subsection 4, Section 33.1-20-03.1-02 NDAC).
Chapter 33-20-04.1 General Performance Standards. Is this information enclosed? ☐ No ☑ Yes	

Specific facility standards appropriate for the type of facility operation including the following (check those that apply):

X	Chapter 33.1-20-05.1 Inert Waste Landfills.
	Chapter 33.1-20-06.1 Municipal Waste Landfills.
	Chapter 33.1-20-07.1 Industrial Waste Landfills.
	Chapter 33.1-20-08.1 Surface Impoundments.
	Chapter 33.1-20-09 Landfills Treatment Provisions.
	Section 33.1-20-04.1-06 Transfer Stations, Baling and Compaction Systems, Processing Systems, and Drop Box Facilities.
	Section 33.1-20-04.1-07 Piles Used for Storage and Treatment Standards.
	Section 33.1-20-04.1-08 Solid Waste Treatment or Resource Recovery Facilities.

Please refer to the Department's "Quality Assurance Guidelines" for information to be obtained for construction quality assurance and reporting for appropriate facilities. Other guidance information may be available for certain facilities.

13. Water Protection: The facility must demonstrate compliance with the General Location Standards of Section 33.1-20-04.1-01 NDAC and the Water Protection Provisions of Chapter 33.1-20-13. Please refer to the Department's "Guidelines for Hydrogeologic Investigations of Solid Waste Facilities" and "Guidelines for Corrective Action of Solid Waste Facilities" for additional information and guidance. Is the information to demonstrate compliance enclosed? ☑ No ☐ Yes

14. Storm Water Compliance: The facility should demonstrate the ability to properly manage storm water and must demonstrate compliance with the NDPDES storm water permit program. A completed application for an industrial and/or construction permit should be filed for approval thirty (30) days prior to the start of operation. Please refer to the enclosed fact sheet for more information. Has an application been filed? ☑ No ☐ Yes

If no, Specify When an Application Will Be Filed Week of May 6, 2021	Is storm water management addressed in the solid waste application? ☐ No ☑ Yes

15. Personnel: Enclose a narrative describing the duties, experience, and training of operators and other personnel for the facility. For municipal waste landfills, demonstrate how the facility will be in compliance with the requirements for certification of operators, Chapter 33.1-20-16 NDAC. Is the information enclosed? ☐ No ☑ Yes

16. Life of Facility: Describe the estimated life of the facility and attach a description of the method used to calculate this figure. Is the description attached? ☐ No ☑ Yes

Estimated Life
93 Years

17. Site Development: Please enclose a timetable showing the proposed site development schedule for the facility and showing timelines for completing the activities proposed in the permit application. Is the information enclosed? ☐ No ☑ Yes

Proposed Opening Date of Facility Existing	Proposed Closing Date of Facility 2114

18. Insurance: Provide the name and address of the insurer of the facility and/or attach a copy of the general liability insurance policy. Provide a statement regarding the limits of the policy for sudden and nonsudden liability coverage. Is a statement of coverage attached? ☐ No ☑ Yes

Name of Insurer		Telephone Number	
Vaaler Insurance (Cincinnati Insurance Company)		701-258-2800	
Address: PO Box 933	City: Bismarck	State: ND	ZIP Code: 58502

19. Financial Assurance: Please demonstrate how the facility will comply with the financial assurance requirements of Chapter 33.1-20-14 NDAC. Is the information enclosed? ☑ No ☐ Yes

20. Local Zoning: Does the site meet the requirements of any local zoning jurisdiction in the area of the facility (county, township, city, etc.)? ☐ No ☑ Yes

Please enclose a copy of any pertinent local zoning ordinances, maps, and a statement from the local zoning authorities and/or political subdivisions that the use of the property for a solid waste management facility as described in this application is consistent with local zoning and/or permitting ordinances. Please enclose a copy of any required local permits. Is this information enclosed? ☐ No ☑ Yes

21. Are local health officials knowledgeable of the facility and the practices to be employed at the site? ☐ No ☑ Yes

22. Fees: Depending on the type and size of the facility, enclose an appropriate application processing fee and annual permit fee as identified in Chapter 33.1-20-15. Are the appropriate fees attached? ☐ No ☑ Yes

23. Other Permits: Will any other structures or features be constructed at the site that require any other permits (for example, underground tanks, air pollution sources, etc.)? If yes, please enclose information to show such facilities will be in compliance with state or federal regulations. ☑ No ☐ Yes

24. Signatures: A permit application must be signed as follows:

a. For a corporation, by a principal executive officer of at least the level of vice-president or the duly authorized representative or agent of the executive officer if the representative or agent is responsible for the overall operation of the facility that is the subject of the permit application;

b. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively;

c. For a municipality, state, federal, or other public agency, by either a principal executive officer or ranking elected official;

d. If the operator of the facility for which the application is submitted is different from the owner, by both the owner and the operator according to Items A to C;

e. For solid waste management facilities, by the facility owner and landowner under Items A to C if the landowner is different from the owner of the facility for which the application is submitted; and

f. For a firm preparing the necessary reports and plans for a solid waste management facility permit application, by an engineer registered in North Dakota.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who will manage this system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information.

Owner's Signature	Date Signed

Print Name	Official Title
David Barth	Chief Manager

Operator's Signature	Date Signed

Print Name	Official Title
David Barth	Chief Manager

Landowner's Signature	Date Signed

Print Name	Official Title
David Barth	Chief Manager

Engineer's Signature	Date Signed

Print Name	Registration
Todd Hartleben	PE-5659

Return this form (and application fee if applicable) to:

North Dakota Department of Environmental Quality
Division of Waste Management
918 E Divide Ave., 3rd Fl.
Bismarck, ND 58501-1947

General Information
Form SFN-19269 Application for A Solid Waste Management Facility Permit

Attached is application form, SFN 19269, for a North Dakota Solid Waste Management Facility Permit. This application form, along with the appropriate attachments, must be completed in order to obtain a permit pursuant to Chapter 23.1-08 of the North Dakota Century Code (NDCC) and Article 33.1-20 of the North Dakota Administrative Code (NDAC). **For your convenience, the application form and rules are also found on the Department's website at https://deq.nd.gov/WM**. Applicants should obtain a copy of these rules and related guidelines and be knowledgeable of the requirements prior to completing the application. Any permit issued by the Department will be based on the permit application information.

Please be sure that you address all information required on the form as well as all other information required under the Solid Waste Management Rules. Return this completed form along with the attachments and other information necessary to complete an application. In certain cases the Department may already have on file information from previous permits or facility evaluations. If the Department deems this material adequate, the applicant may reference these documents, the date they were submitted, and the date they were approved. In the event an application is not considered complete, or is inaccurate or deficient as outlined in the North Dakota Solid Waste Management Rules and Departmental guidelines, the Department will notify the applicant as promptly as possible so that the applicant has the opportunity to revise the submittal.

Permit preapplication provisions are identified in Section 33.1-20-03.1 of the North Dakota Solid Waste Management Rules. All applications for new solid waste management facilities must comply with the preapplication procedures. Submittal of an application for a new or modified permit requires the applicant to publish a Public Notice as specified in Section 33.1-20-03.1-02 NDAC. Department permit application review and action procedures are contained in Section 33.1-20-03.1-03 NDAC. This section also indicates which public participation processes are appropriate for new or modified applications. The Department consults with the North Dakota Geological Survey, the North Dakota State Water Commission, the Department's Division of Water Quality, and any other agencies necessary to help assess a site's suitability. Thus, a minimum of four copies of application materials is required. Additional copies may be necessary for other affected state or federal agencies and any local political subdivisions, etc.

A permit from the Department does not supersede local zoning authority or any other requirements of any political subdivision of the state. Coordination with any local zoning officials, local health officials, and any other necessary local, state or federal programs and agencies are necessary prior to submitting the application. Corroboration of such information is necessary to proceed with the application review. The Department encourages all applicants to work closely with local political subdivisions and local health officials, as well as the Department, throughout the permitting process.

For questions, please contact the Division of Waste Management at (701) 328-5166.
For questions regarding securing of registration numbers from the ND Secretary of States Office, call (701) 328-4284.

Supporting Information for Solid Waste Permit Application
DB Waste Inert Waste Facility
D.B. Waste, LLC
April 27, 2021

Item 3. Applicant Information

D.B. Waste, LLC is a North Dakota limited liability company.

Item 4. Survey Land Description

The Facility is located on land owned or under contract for deed by D.B. Waste, LLC. A formal survey of boundary and certified copies of the property deeds are enclosed.

Item 7. Preapplication

This is an existing facility, and this item is not applicable.

Item 8. Facility Access and Hauling

Access to the site (approximately 8 miles north and 2.5 miles west of Bismarck) is directly from 34th Street NW (a township gravel road in good condition). 149th Avenue NW (a township paved road in good condition) connects to Highway 83. 149th Avenue was paved due to dust concerns associated with traffic generated by this disposal facility. Waste haulers are using semis and trucks to transport tires to the landfill.

9. Compliance History

D.B. Waste, LLC has received a Notice of Violation (NOV) from the North Dakota Department of Environmental Quality Division of Solid Waste on March 11, 2021. The NOV notes noncompliance with windblown debris, steep slopes, closures areas, and record keeping. This application includes a response to the NOV along with revised plans of operation and record keeping. A closure plan is also included.

10. Waste Information

The nature and quantity of the waste to be disposed is discussed in the Plan of Operation.

13. Water Protection

Water protection requirements cited in this item do not apply to inert landfills.

14. Storm Water Compliance

The existing facility has a current NDPDES permit. A NDPDES permit application for a new disposal area will be submitted the week of May 3, 2021.

15. Personnel

Landfill employees include a site manager with overall responsibility for site operations, staff, equipment, inspections, monitoring, reporting, etc. Other landfill operations will include equipment operators. All employees receive landfill operator training. All employees receive specific and ongoing training regarding the contents of the facility permit, operating requirements, waste acceptance criteria, facility monitoring and inspection requirements, etc. Waste acceptance decisions are made by management staff and must be pre-approved before delivery to the site.

16. Life of Facility

The facility life is estimated to be 93 years, based upon a total disposal capacity of 6.5 million cubic yards and an estimated annual receipt of 70,00 cubic yards.

17. Site Development

A detailed site development schedule is included.

18. Insurance

A certificate of liability insurance is enclosed.

19. Financial Assurance.

Financial assurance requirements do not apply to inert landfills.

20. Local Zoning

Burleigh County approved a Special Use Permit for construction and operation of a sanitary landfill at the January 1983 Commissioners Meeting for a period of 50 years. A copy of the minutes from the meeting is included.

Plan of Operation and Closure

D.B. Waste, LLC
Burleigh County, North Dakota
ND Solid Waste Permit #0163

Prepared for:

D.B. Waste, LLC
311 South 7th Street
Bismarck, ND 58504
Project #4375

April 26, 2021

Carlson McCain

600 South 2nd Street, Suite 105
Bismarck, ND 58504
Tel 701-255-1475
Fax 701-255-1477
www.carlsonmccain.com

ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that properly qualified personnel properly gather and evaluate the information submitted based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information. The information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

_____

Todd A. Hartleben, P.E.

_____

Date

License No. 5659

Plan of Operation and Closure
D.B. Waste, LLC
Burleigh County, North Dakota

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

D.B. Waste, LLC is proposing a revised expansion of the existing inert landfill operating under North Dakota Department of Environmental Quality (NDDEQ) Permit 0163. This Plan of Operation and Closure has been updated in support of the permit expansion under D.B. Waste, LLC.

The primary contacts for the facility are as follows:

David Barth
Owner
701-319-0777

Lee Fergel
Vice President
701-527-0096

George Schick
Operations Manager
701-226-1611

Courtney Fergel
Office Manager
701-527-0580

The facility accepts only those wastes allowed under the NDDEQ inert waste disposal rules and regulations, Sections 33-20-05.1 and 33-20-04.1-02, -03, -04, -05 and -09, as amended in February 2002, and the terms of Permit 0163.

This document contains the Plan of Operation and Closure of the Inert Waste Facility, which spells out the management, operation, and future closure of this facility as required under the North Dakota Administration Code (NDAC) Article 33-20.

This document has two primary components: the Plan of Operation and the Plan of Closure. These plans are required by state inert waste rules and associated regulations applicable to inert waste facilities.

The principal objective of the Plan of Operation is to provide the facility operator and employees with a plan for the operation of D.B. Waste, LLC. It has the following purposes:

- Identify approved disposal areas.
- Identify waste limits and elevations.
- Identify waste acceptance and handling procedures
- Establish an inspection and monitoring plan
- Provide contingencies for emergency situations
- Keep the site secure from unauthorized personnel
- Identify equipment used onsite and the operation and maintenance of the equipment

- Provide a safety plan for the facility
- Exclude unauthorized disposal and use of the facility
- Identify partial closure procedures
- Establish a waste management plan
- Provide a procedure for inspection of the facility by the owner/operator
- Establish recordkeeping and reporting procedures

The complete Plan of Operation is Part 4.0 of this document.

The principal objective of the Plan of Closure is to provide the operator and employees of D.B. Waste, LLC with a plan for the closure of the Inert Waste Facility. It has the following purposes:

- Control waste and minimize maintenance
- Establish a timeline for partial closure and a timeline for closure
- Identify closure reporting criteria
- Provide the owner/operator with a written closure plan detailing steps necessary for final closure, including construction of the final cover
- Minimize percolation
- Suppress vectors
- Suppress the danger of fire
- Prevent blowing litter
- Promote aesthetics
- Enhance site reclamation
- Reduce the potential for post-closure intrusion
- Address final reporting and public notice requirements

The complete Plan of Closure and associated Post-closure Criteria are Parts 5.0 and 6.0 of this submittal, respectively.

A Certificate of Zoning Compliance for the facility by Burleigh County is included in Appendix A.

2.0 SITE DESCRIPTION

The D.B. Waste Inert Waste Facility is located approximately eight (8) miles north of the City of Bismarck, North Dakota, and two and one-half (2½) miles west of United States Highway 83. The facility is situated on parcels of property comprising approximately 396 acres. Approximately 297 acres of this property is currently approved for operation as a sanitary landfill by a special use permit issued by Burleigh County (Ordinance 83-01, adopted January 5, 1983). The extents of the current facility are located in the S½-S½-NW¼, and the N½-SW¼ of Section 12, Township 140 North, Range 81 West, Burleigh County, North Dakota.

D.B. Waste currently owns or has a contract for deed for the following parcels of land in Township 140 North, Range 81 West:

SE¼- NW¼, Section 11;
S½- NE¼, Section 11;
S½- NW¼, Section 12;
NE¼- SW¼, Section 11;
N½- SE¼, Section 11; and
N½- SW¼, Section 12

The portion of the property described above which is currently approved by County ordinance for landfill operations is as follows:

S½-SE¼-NW¼, Section 11;
S½-S½-NE¼, Section 11;
S½-S½-NW¼, Section 12;
NE¼- SW¼, Section 11;
N½- SE¼, Section 11; and
N½- SW¼, Section 12

A Site Location Map showing the D.B. Waste Facility is contained in Appendix B and a boundary survey is presented in the Figures.

3.0 FACILITY DEVELOPMENT

Current disposal activity is currently occurring in the active cell area as depicted on the enclosed figures. Continued operations of the facility will require expansion of the waste disposal operations within the next permit period.

Nine additional disposal cells (53.64-acres) in the North ½ of the Southeast ¼ and the South ½ of the Northeast ¼ of Section 11, are depicted on the enclosed figures. The proposed base grades and final cover elevations are depicted on the enclosed figures.

Existing topsoil and suitable plant growth material (SPGM) would be stripped from this area prior to disposal of inert materials.

Closure of current and future disposal areas will follow orderly development of expansion areas. Closure will be performed in accordance with applicable regulations and will be certified by a registered engineer. The Department of Health will be notified prior to initiating closure procedures.

Total disposal capacity of the proposed expansion(s) is approximately 6.5 million cubic yards (less intermediate and final cover volumes). The overall life of the facility is estimated at 93 years based on current disposal volumes. Increases or decreases in disposal volumes and soil handling practices will affect the timing of the overall expansion and life of the facility.

4.0 PLAN OF OPERATION

A. NDAC 33-20-04.1-03

1. Plan

The owner or operator of a solid waste management unit or facility shall prepare and implement a plan of operation approved by the department as part of the permit. The plan must describe the facility's operation to operating personnel and the facility must be operated in accordance with the plan. The plan of operation must be available for inspection at the request of the department.

This plan has been prepared to provide personnel with a reference for the operation of the D.B. Waste, LLC, which is operated in accordance with the Plan of Operation. The Plan of Operation is available to the operator's site personnel, NDDEQ, and other regulatory officials and agencies.

Each plan of operation must include, where applicable:

2. Waste Acceptance Procedures

A description of waste acceptance procedures, including categories of solid waste to be accepted and waste rejection procedures as required by Subsection 2 of Section 33-20-05.1-02, or Subsection 8 of Section 33-20-06.1-02, or Subsection 2 of Section 33-20-07.1-01, or Subsection 4 of Section 33-20-10-03.

Subsection 2 of Section 33-20-05.1-02 applies to this facility and states: *Disposal of the following solid waste into inert waste landfills is prohibited: agricultural waste, asbestos waste, municipal waste, commercial waste, industrial waste, special waste, regulated infectious waste, liquid solid waste, hazardous waste, and radioactive waste.*

Only inert waste is accepted at D.B. Waste, LLC. Acceptable and unacceptable wastes are presented on the following page and are discussed further in Section 3.A.1.h.(4). Waste is routinely inspected using procedures described in the Inspection and Monitoring Plan (Section 3.A.1.c.) of this Plan of Operation. Waste deemed acceptable is landfilled according to procedures identified in the Waste Handling Procedure (Section 3.A.1.b.) of this Plan of Operation. Waste that is identified as unacceptable and deemed rejected and the generator who brought the waste to the facility is then responsible for proper disposition of the rejected waste.

Guidelines for Accepted/Rejected Waste
D.B. Waste, LLC

*According to State regulations, certain types of waste cannot be accepted for disposal at the inert waste facility. The following list describes those restrictions.

Acceptable Waste	Unacceptable Waste
• Inert Waste: Examples are metal products, wood products, brick products, masonry products, cement, cured concrete, asphalt, tires, tree branches, bottom ash from coal-fired boilers. (This does not include special waste, industrial waste, or any of the restricted materials) • Waste coal fines from air pollution equipment. • Fiberglass, urethane, polyurethane, and epoxy resin waste when mixed with construction debris. • Metal waste that does not contain oils, solvents, PCBs, or other similar materials. • Grass and leaves (accepted and set aside for composting). • Trees (accepted and landfilled). • Tires (accepted and set aside for shredding to use as a cover material or landfilling). *These materials are accepted only if delivered to the Inert Waste Facility and refrigerant has been removed.*	• Asbestos, garbage, putrescible or household or municipal waste. • Hazardous waste including ignitables (solvents, paints & fuel), corrosives (Acids & alkalis), reactives, toxicity characteristics and listed wastes. • Industrial waste, if not addressed in the industrial waste management plan and the permit. • Lead acid batteries. • Liquids. • Bulk chemical containers (Exception-triple rinsed & punctured pesticides will be accepted). • Polychlorinated biphenyls (PCB) waste/oil including transformers from fluorescent lights. • Raw or digested sewage sludge, lime sludge, grit chamber cleanings, animal manure, septic tank pumpings, bar screenings and other sludge. • Regulated infectious waste, except in household amounts. • Special waste • Used oil (none-including household amounts) • Radioactive waste • Rendering and slaughterhouse waste • Foundry ash • Spent activated carbon filters. • Paint waste • Fiberglass, urethane, polyurethane, or epoxy resin waste • Oil & gas exploration and production waste • Contaminated soil waste • Soluble wastes (fly ash, salt, etc.) • Animal carcasses • Waste grain, seed, and elevator screenings *The North Dakota Department of Health has established the above list of restricted wastes. The Inert Waste Facility does not accept these wastes for landfilling. This list may be subject to changes as rules are revised or as wastes are approved or disapproved by the Department.*

The facility's operator is responsible for, and supervises, waste acceptance and handling at D.B. Waste, LLC. The facility has a year-round operating schedule. The facility is only open to private haulers and not open to the public. The days of operation are typically Monday through Friday from 7 A.M. to 5 P.M. and Saturday until noon. The days and hours of operation may vary, if warranted, to accommodate seasonal and operational variables. The operator or his designee inspects the waste and ensures proper offloading, segregation, and final placement of the waste. The operator supervises employees who operate equipment at D.B. Waste, LLC, and observe unloading operations by waste transporters who haul into the facility. This procedure is followed in an effort to ensure proper segregation and landfilling of inert waste. The facility is locked and keys are available only to the operator and his employees, and to private haulers. The haulers are trained regarding restricted wastes and handling.

3. Waste Handling Procedure

Waste is accepted at D.B. Waste, LLC, according to the operating schedule detailed above. The majority of the waste accepted at the facility is hauled to the facility by private haulers.

Inert Waste Disposal

Upon entering the facility, the waste transport vehicle moves to the offloading location appropriate to the type of waste being transported, as directed by facility personnel. The inert waste is offloaded. Waste is consolidated and compacted within the fill area, as needed, through operation of a bulldozer, loader, or other suitable compaction equipment. Whole tires are covered with at least two feet of other waste before the final cover is placed.

The operator or his designee is the last to leave the facility following disposal operations. The gate at the facility entrance is secured at the completion of daily operations. A temporary cover of tire shred and/or dirt is placed over the inert waste at least semiannually as required by NDDEQ rules. The waste may be covered more frequently, depending upon the quantity and type of inert waste accepted. In this application, the operator has agreed to cover every other day of operation.

NDAC 33-20-04.1-07.5 requires the following for composting of grass and leaves.

a. Direct surface water or storm water from composting and waste storage areas

Surface water from areas upgradient of the compost area is directed away from the compost area through the use of earthen berms.

b. Control surface water drainage to prevent leachate runoff

Surface water drainage from the compost areas will be controlled and not allowed to discharge offsite.

c. *Store solid waste separated from compostable material in a manner that controls vectors and aesthetic degradation, and remove this solid waste from the site to an appropriate facility at least weekly*

The compostable material is typically delivered to the site separate from other waste types. In the event other wastes are present, inert waste will be managed in the inert waste landfill and municipal solid waste will be rejected. Vectors in the compost area are not expected to be a problem given the absence of a food source in the compost material.

d. *Turn the yard waste periodically to aerate the waste, maintain temperatures, and control odors*

As previously indicated, the compost material is periodically turned to enhance decomposition.

e. *Prevent the occurrence of sharp objects greater than one inch (2.54 centimeters) in size in finished compose offered for use*

Although sharp objects are not typically encountered in the compost material, use of the compost is limited to onsite applications. Therefore, this requirement is not applicable.

Recyclable Materials

Metal and appliances that are brought to the facility, and can be recycled, are temporarily stored in an area apart from the waste disposal area. Items such as air conditioners, refrigerators, and freezers are accepted only if the refrigerant has been removed. The recyclable material is removed from the site when enough have been collected for transport to a recycling facility.

4. Inspection and Monitoring Plan

A description of facility inspection activities required by subsection 2, including frequency:

Inspection and monitoring of waste loads hauled to the facility is performed by the operator to ensure that restricted waste is not accepted. Facility personnel routinely observe the composition of waste that is brought to the facility during unloading and compaction activities. In addition, random load inspections, which entail a more thorough evaluation of waste composition, are conducted. Random inspections of incoming waste loads are performed at the frequency of about one per week, or one percent of the incoming loads, whichever is greater. The load selected for random inspection will be directed to the inspection area, which will typically be the active disposal area. The waste will then be unloaded.

Using a bulldozer, compactor, or other suitable equipment, the equipment operator will separate or spread the load and visually inspect the waste from the cab of his machine. For safety consideration, walking into the waste by facility personnel will be avoided. A random load inspection form, which documents the date, time, waste volume, waste contents, restricted waste and mitigation actions taken, is completed by the operator. The form is signed, dated and placed in the facility operating record following the inspection. The operating record is maintained at

D.B. Waste, LLC. The sample load inspection form contained in Appendix C, or a like form, will be used at the facility.

The Inert Waste Facility is routinely inspected by the operator to ensure:

- Control and rejection of unauthorized waste
- Adherence with the Safety Plan
- Control of blowing dust and litter
- Appropriate controls of vectors
- Observation and identification of fire or explosion hazards, leaks
- Operation of run-on diversion/runoff containment systems

A daily report form is completed that identifies the inspector, date, time, the above-listed criteria, results of the inspection and corrective action steps to be taken, if required. The form is signed, dated, and placed in the facility operating record. A copy of the Daily Log of Operations is included in Appendix C.

5. Contingency Plan

A description of contingency actions for the following:

Fire or Explosion

D.B. Waste, LLC is prepared to respond to fire or explosions at the facility. The uncovered area of active disposal of wood, tires, tire shreds, plastic and other potentially burnable material shall not exceed 24,000 square feet unless otherwise approved by the NDDEQ. Adequate cover soil shall be stockpiled in close proximity to the disposal area to be used in the event of a fire or other emergency. These stockpiles shall, at a minimum, be equivalent to two cubic feet per square foot of open area. If a fire within the inert landfill, or unloaded waste, were to occur, soil berms would be placed around the fire location to prevent the spread of the fire offsite. If the fire is accessible, soil would be pushed over the burning area to smother the fire. Soil berms will only be placed if the operation can be done in a safe manner. Fire extinguishers are placed on all facility equipment and will be used for small fires. A local fire department and/or a local contractor will be called to the site if fires cannot be contained. The names and telephone numbers of emergency responders are included in the Site Safety Plan in Appendix D.

The NDDEQ and the North Dakota Department of Emergency Management will be contacted to assess them of the occurrence, if deemed necessary. The Site Safety Plan is available to all employees and local public officials who may respond to emergencies at the facility. The Safety Plan identifies appropriate officials by name, address, and telephone number to contact at appropriate response levels in case of such an emergency. The Safety Plan also spells out appropriate actions to be taken in case of fire at the facility.

Leaks

Leaks requiring regulatory action at the Inert Waste Facility are not expected to occur. The only leaks possible at the site are from petroleum products and equipment stored onsite. A temporary berm or containment structure may be constructed around leaking equipment in an effort to restrict drainage from any leak moving offsite, if warranted. If a leak occurs in a working area on hard surface, an absorbent may be applied to prevent spreading until cleanup can be accomplished. Spill kit

If a leak occurs, the operator will notify the NDDEQ Division of Water Quality (701-328-5210), if warranted. The Safety Plan will be reviewed to ensure that corrective actions follow proper protocol applicable to the situation.

Groundwater Contamination

There are three (3) groundwater monitoring wells in the vicinity of D.B. Waste, LLC. These wells were last tested in 1993. Due to the nature of the waste accepted at this facility, future groundwater monitoring is not anticipated as part of the permit requirements from the NDDEQ.

Other Releases (e.g., dust, debris, failure of run-on diversion of runoff containment systems)

Facility monitoring performed by the operator will assess the facility for blowing dust, debris, failure of run-on diversion and runoff containment systems (Section 3.A.1.c – Inspection and Monitoring Plan). The operator will also assess and monitor any concerns which may be raised by regulatory requirements.

The operator will monitor conditions at the facility to minimize the occurrence of blowing dust and debris. Blowing dust may be controlled by utilizing a water truck to sprinkle water on the facility area(s) generating dust or through use of onsite water hoses.

Blowing debris will be addressed through placement of soil cover and/or tire shred over the exposed waste to alleviate the condition (see Section 3.A.1.b.). Litter will be picked up routinely by site personnel.

The storm water runoff containment system is comprised of a collection area located down gradient from the active landfilling locations. The collection area intercepts and contains runoff.

A number of practices may be employed to prevent surface water run-on from adjacent areas. Such practices include: 1) constructing the top of slope of the disposal cell base grade higher than the adjacent ground surface, 2) constructing swales or berms to direct surface water away from the disposal cell, and 3) grading adjacent areas to effect positive drainage away from the disposal cell limits.

Surface water run-on controls will be monitored as part of the routine facility inspections, and maintenance will be performed as warranted.

Heavy precipitation events may cause failure of run-on or runoff control containment systems. Such failures would be temporarily addressed with berms and ditches using available soil until a permanent repair could be made.

A daily report form is completed that identifies the inspector, date, time, the above-listed criteria, results of the inspection and corrective action steps to be taken, if required. The form is signed, dated, and placed in the facility operating record (Appendix C).

Other Issues

Any other issues pertinent to the facility.

The D.B. Waste, LLC sign states only certified haulers are allowed and public dumping is not allowed. Site security is provided to control scavenging, vandalism, and theft, and to prevent unauthorized dumping. Facility gates restrict vehicle access onto the site. The general area is surrounded by a fence.

6. Leachate Removal System Operation and Maintenance Procedures

The Inert Waste Facility does not have a leachate removal system, and one is not required pursuant to the permit and regulatory requirements for this type of disposal facility.

7. Safety Procedures

The Site Safety Plan is presented in Appendix D. The operator is responsible for implementing the plan and assuring all necessary equipment is available and personnel are aware of safety and health protocol. The Safety Plan is applicable for all facility employees and users of D.B. Waste, LLC. The D.B. Waste, LLC Safety Plan is kept onsite. The plan may be amended from time to time to reflect changes in site conditions, emergency contacts, and safety and emergency response protocol/requirements.

8. Partial Closure Procedures

For landfills, implementation of sequential partial closure.

D.B. Waste, LLC will complete phased closure of the facility in areas where inert waste has filled the available disposal capacity. Such partial closure will consist of placing final cover on the completed fill area. The final cover will meet the specifications identified in the Plan of Closure. The filling sequence will progress in such a way as to make the most efficient use of the available site. The Plans present the current disposal area, access roads and general layout of the facility.

The Closure Cover Design is located on the Plans. Placement of suitable cover and grass seeding identified in the Plan of Closure will take place on areas of completed partial closure.

9. Industrial/Special Waste Management Procedures

A description of industrial waste or special waste management procedures, which include:

Notification

A procedure for notifying solid waste generators and haulers of the facility operating requirements and restrictions:

The facility has prepared guidelines that specify the waste that can be accepted at the Inert Waste Facility. These guidelines also identify the waste that cannot be accepted. The guidelines are provided to individuals and haulers when bringing waste onto the facility. The Guidelines for Accepted/Rejected Waste are previously shown in Figure 1.

Evaluating Waste Characteristics

A procedure for evaluating waste characteristics, liquid content, the specific analyses that may be required for specific wastes, and the criteria used to determine when analyses are necessary, the frequency of testing, and the analytical methods to be used.

D.B. Waste, LLC has developed a visual procedure for evaluating waste characteristics. Specific waste evaluation guidelines are:

- Major appliances – accepted for later recycling only if refrigerant has been removed
- Grass and leaves – accepted and segregated for composting
- Trees – accepted for landfilling
- Tires – accepted for landfilling
- Liquid wastes of any kind – not accepted
- Special handling requirements and restrictions for specific wastes – refer to Solid Waste Handling (Section 3.A.1.h.(4)[a-p]) of the Plan of Operation
- Household and/or municipal waste – not accepted
- Waste qualifying as inert waste – accepted; liquid restrictions apply to inert waste
- Waste generated by industrial businesses – regulated industrial wastes are not accepted unless expressly approved of by the NDDEQ; liquid restrictions apply

Inspection and Identifying Procedures

A procedure for inspecting and identifying any special management requirements, and the rationale for accepting or rejecting a waste based on its volume and characteristics.

D.B. Waste, LLC has established the following protocol for inspecting and monitoring waste at the facility. The operator will direct the waste to be offloaded. During offloading and/or compaction, the operator (using safety procedures) will visually monitor the load or conduct a random load inspection as previously described. He generally identifies the waste being offloaded following the facility's Guidelines for Accepted/Rejected Waste (Figure 1). Identified restricted wastes are segregated. Any questionable waste is segregated for further inspection. Questionable

wastes are appraised to ensure the waste complies with inert waste criteria. Questionable waste identified as inert waste will be landfilled. Waste that is not inert waste will be segregated and returned to the generator for proper disposal.

Solid Waste Management

Procedures for managing the following solid waste, as appropriate:

Bulk Chemical Containers

Bulk chemical containers that contain free product or residue.

D.B. Waste, LLC will not accept bulk chemical containers containing free product or residue. Bulk pesticide containers that have been triple rinsed and punctured are accepted.

Asbestos

D.B. Waste, LLC will not accept asbestos.

PCB Waste

Waste containing polychlorinated biphenyls at a concentration less than 50 parts per million.

D.B. Waste, LLC will not accept PCB waste.

Radioactive Waste

D.B. Waste, LLC will not accept regulated radioactive waste.

Rendering and slaughterhouse waste

D.B. Waste, LLC does not accept rendering and slaughterhouse waste, carcasses, or dead animals.

Combustible Waste

Wastes that could spontaneously combust or that could ignite other waste because of high temperatures.

D.B. Waste, LLC will not accept highly combustible waste, or waste that could ignite other waste because of high temperatures. Wood products that are traditionally inert are accepted for landfilling. Grass and leaves are accepted for composting or landfilling. Tires are accepted for landfilling. The shredded tires are used as a cover material for the inert wastes. In the event of accidental fire involving wood or tire products, the Contingency Plan would be implemented.

Foundry Waste

D.B. Waste, LLC will not accept foundry waste.

Ash Waste

Ash from incinerators, resource recovery facilities, and power plants.

D.B. Waste, LLC may accept bottom ash and waste coal fines at the Inert Waste Facility. The majority of such ash is anticipated from small coal-fired boilers, or furnaces serving homes, schools and small businesses.

Paint

Paint residues, paint filters, and paint dust.

D.B. Waste, LLC may accept paint residues found in conjunction with demolition or other inert waste. Paint containers from contractors must be empty and contain no free liquids prior to acceptance at the facility.

Sludge

Sludge, including ink sludge, lime sludge, wood sludge, and paper sludge.

D.B. Waste, LLC accepts lime sludge from the City of Bismarck Water Treatment Plant. Lime sludge will be off-loaded in a designated area for drying. It cannot be off-loaded and mixed with waste immediately due to the slippery nature of the lime sludge and safety concerns of operators. Once dried, it will be moved to the active disposal area and mixed with other waste.

Fiberglass, Urethane, Polyurethane, and Epoxy Resin Waste

D.B. Waste, LLC may accept cured fiberglass, urethane, polyurethane, and epoxy resin waste that is intermixed with inert waste generated from the construction or demolition of buildings. Wind turbine blades may also be accepted.

Spent Activated Carbon Filters

D.B. Waste, LLC will not accept spent activated carbon filters.

Oil and Gas Exploration and Production Waste

D.B. Waste, LLC will not accept oil and gas exploration and production waste.

Wastes Containing Free Liquids

D.B. Waste, LLC will not accept waste containing free liquids.

Contaminated Soil Waste

Contaminated soil waste from cleanup of spilled products or wastes.

D.B. Waste, LLC will not accept contaminated soil waste.

Other Solid Waste Handled

Any other solid waste that the owner or operator plans to handle.

D.B. Waste, LLC will not accept other waste unless NDDEQ approval is obtained prior to acceptance.

Solid Waste Not Accepted

The owner or operator must describe any solid waste that will not be accepted at the facility.

D.B. Waste, LLC is restricted, according to the terms and conditions of Permit 0163 and by 33-20-05.1 of the Solid Waste Management Rules for Inert Waste Facilities, from accepting the following:

Household garbage and putrescible waste; asbestos; soluble waste (fly ash, salt, etc.); animal carcasses; waste grain, seed, and elevator screenings; liquids; un-rinsed pesticide containers; lead acid batteries; waste oil; PCB waste/oils; hazardous wastes (i.e., ignitables [solvents, paints, and fuels], corrosives [acids and alkalis], reactives, toxicity characteristic and listed wastes); hazardous materials; sludge; manure and septic tank pumpings; or infectious wastes.

10. Amended Plan Criteria

The owner or operator must amend the plan whenever operating procedures, contingency actions, waste management procedures, or waste has changed. The owner or operator shall submit the amended plan to the department for approval or disapproval.

D.B. Waste, LLC will assess the Plan of Operation whenever a new condition arises that may require the Plan of Operation to be amended. Where appropriate, the facility will contact the NDDEQ regarding the feasibility of the proposed change. Should the change be appropriate, the Plan of Operation will be amended. The affected Section(s) of the Plan of Operation will be submitted to the NDDEQ for review.

11. Inspection by Owner/Operator

The owner or operator shall inspect the facility to ensure compliance with this article, a permit, and approved plans. The owner or operator shall keep an inspection log, including information such as the date of inspection, the name of the inspector, a notation of observations made, and the date and nature of any repairs or corrective action taken.

The operator for the Inert Waste Facility will conduct routine inspections at the facility using log forms to record inspection and monitoring duties. The completed forms will be available for inspection by the NDDEQ and other appropriate regulatory officials upon request.

A daily report form is completed that identifies the inspector, date, time, the above-listed criteria, results of the inspection and corrective action steps to be taken, if required. The form is signed, dated, and placed in the facility operating record. This form is included in Appendix C.

B. NDAC 33-20-04.1-04 Record Keeping and Reporting

1. Approval to Accept Waste

A solid waste management facility may not accept solid waste until the department has received and approved a report that includes narrative, drawings, and test results to certify that the facility has been constructed in accordance with the approved plans and specifications, as required by the permit.

The facility received a permit to construct and operate the inert waste landfill (Permit 0163) on August 20, 2015, from the NDDEQ. Issuance of the Permit, and subsequence acceptance of waste, was predicated on plans submitted by the facility in support of the permit application. This Plan of Operation and Closure is an update to the plans previously prepared and submitted for the facility.

2. Operating Record

An owner or operator shall keep an operating record consisting of a copy of each application, plan, report, notice, drawing, inspection log, test result, or other document required by this article, including those enumerated in the subdivisions of this subsection, or a permit. The operating record must include any deviations from this article, the permit, and facility plans where department approval is required. The owner or operator shall provide a copy of any document in the operating record upon receiving a request from the department. The operating record must be kept at the facility or at a location near the facility within North Dakota and approved by the department.

D.B. Waste, LLC will maintain an operating record at the facility in accordance with requirements of the NDDEQ.

The permit pre-application, Section 33-20-03.1-01

D.B. Waste, LLC is not subject to this condition according to Section 33-20-03.1-01 and the location standards of Subsection 2 of Section 330-20-04.1-01. Therefore, no permit pre-application is part of the operating record.

The permit application, Section 33-20-03.1-02

The operating record for D.B. Waste, LLC will contain a copy of the permit application as approved by the NDDEQ.

An amended permit pre-application, Section 33-20-03.1-03

The operating record for D.B. Waste, LLC will contain a copy of any amended permit applications, as stipulated by the NDDEQ.

The site characterization, Section 33-20-13-01

D.B. Waste, LLC operating record will contain a copy of the site characterization. Section 33-20-13-01 states: *The department shall require adequate site characterization to ensure that the waters of the state are not, or will not, be adversely impacted by the solid waste management facility. At a minimum the site characterization must address the following:*

a. *Location and water quality of lakes, rivers, streams, springs, or wetlands within one mile (1.61 kilometers) of the site boundary, based on available data*

See Appendix E for Wetland Map.

b. *Domestic and livestock wells within one mile (1.61 kilometers) of the site boundary. Information collected should include the location, water quality, depth to water, well depth, screened interval, yields and the aquifers tapped*

See Appendix F for North Dakota Water Commission Reports of wells.

c. *Site location in relation to the one hundred-year floodplain*

The facility does not lie near any location where one hundred-year floodplains have officially best established.

d. *Depth to, and thickness of, the uppermost aquifers*

See Appendix F for North Dakota Water Commission Reports of wells.

e. *Hydrologic properties of the uppermost aquifers beneath the proposed facility, including existing water quality, flow directions, flow rates, porosity, coefficient of storage, hydraulic conductivity, and potentiometric surface, or water table*

See Appendix F for North Dakota Water Commission Reports of wells.

f. An evaluation of the potential for impacts to surface and ground water quality from the proposed facility

D.B. Waste, LLC presents minimal potential for adverse impact to surface and/or groundwater quality. The general inert nature of the waste accepted would indicate that very little potential for leachate generation from this waste stream exists.

Any site demonstrations, Section 33-20-04.1-01

Inert waste landfills are exempt from this requirement. Therefore, D.B. Waste, LLC has not had any site demonstration relating to requirements of Section 33-20-04.1-01.

Documentation of training, Section 33-20-04.1-02

D.B. Waste, LLC will maintain records of training, including names, dates, description of instruction methods, and copies of certificates awarded, in the facility operating record.

The Plan of Operation, Section 33-20-04.1-03

This document constitutes the Plan of Operation for the Inert Waste Facility.

Facility inspection logs, Section 33-20-04.1-03

D.B. Waste, LLC will maintain waste and facility inspection logs, as required by the NDDEQ.

Records of notice, Section 33-20-02.1-04

The operating record for D.B. Waste, LLC contains a notarized affidavit with the County Recorder of Deeds specifying that the facility is permitted to accept solid waste for disposal.

As-built drawings and certifications, Sections 33-20-04.1-04 and 33-20-04.1-05

The NDDEQ has permitted the facility, and necessary information relating to Section 33-20-04.1-04 is in the facility operating record. Section 33-20-04.1-05 stipulates closure requirements, and D.B. Waste, LLC will comply with these requirements when the facility is closed.

The groundwater monitoring plan, all monitoring data, and statistical interpretations, Section 33-20-13-02

Section 33-20-13-02 excludes inert waste facilities from this requirement; therefore, this facility does not maintain this information within the operating record.

Records of the weight, or volume, of waste, Section 33-20-04.1-09

The facility will maintain records of the weight or volume of waste received and report this information to the NDDEQ during annual reporting.

The closure plan, Sections 33-20-04.1-05 and 33-20-14-02

The Plan of Closure for D.B. Waste, LLC is part of this document.

The post-closure plan, Sections 33-20-04.1-09 and 33-20-14-02

Post-closure criteria for D.B. Waste, LLC is included in this plan. Construction and Operations Standard, paragraph 3 of this section, does not apply to inert waste landfills.

The financial assurance instruments for closure and post-closure, Chapter 33-20-14

These requirements do not apply to inert waste landfills.

Records of gas monitoring and remediation, Section 33-20-06.1-02

D.B. Waste, LLC does not accept municipal waste and therefore is not subject to this requirement.

The annual report, Section 33-20-04.1-04

The facility will file the annual report as required.

Notices of intent to close and completion of post-closure, Sections 33-20-04.1-05 and 33-20-04.1-09, respectively

The facility will provide written notice to the NDDEQ of its intent to close prior to initiation of closure. The facility is an inert waste facility, and as such, is exempt from 33-20-04.1-09, according to the rule.

The permit and any modifications, Sections 33-20-02.1-03 and 33-20-02.1-06

The facility will comply with NDDEQ permit and modification processes for inert waste facilities.

C. Annual Report

An owner or operator shall prepare and submit a copy of an annual report to the department by March 1st of each year. The annual report must cover facility activities during the previous calendar year and must include the following information:

- Name and address of the facility

- Calendar period covered by the report
- Annual quantity for each category of solid waste in tons or volume
- Identification of occurrences and conditions that prevented compliance with the permit and this article.
- Other items identified in the facility plans and permit

The facility shall prepare and submit an annual report to the NDDEQ by March 1st of each year. The annual report shall comply with the above described criteria for the previous year.

5.0 PLAN OF CLOSURE

A. NDAC 33-20-04.1-05 Plan of Closure

General closure standards. The requirements of this Section apply to all solid waste management facilities, unless otherwise specified.

1. Closure Criteria

Each owner or operator shall close their facility in a manner that achieves the following:

D.B. Waste, LLC will be closed in accordance with NDDEQ criteria as permitted.

2. Maintenance Minimization

Minimizes the need for further maintenance.

D.B. Waste, LLC will be closed in a way to minimize further maintenance. Please refer to the Written Closure Plan – Section 5 below for the proposed steps for closure of the facility. Maintenance equipment will be available to perform final closure activities.

3. Waste Control Methods

Controls, minimizes, or eliminates any escape of solid waste constituents, leachate, fugitive emissions, contaminated runoff, or waste decomposition products.

The Plan of Closure addresses measures to minimize water coming into contact with the waste and enhance precipitation runoff from the closed cell at the facility. The closure design shall minimize percolation of water through the waste. The waste will be covered to prevent contact with precipitation. By minimizing surface water coming into contact with the waste, waste decomposition products are essentially eliminated. The cover and cap material are of sufficient depth and consistency to eliminate the probability of any escape of solid waste constituents and/or fugitive emissions. Since this is an inert waste facility, biological decomposition is unlikely.

4. Partial Closure Plan

Sequential partial closure must be implemented to minimize the working face of the landfill.

The facility will follow a partial closure procedure, which is found in the Plan of Operation (Section 3.A.1.g.). A conceptual closure cover design is found in the enclosed Figures. The areas under partial closure will have a final cover placed, as required by 33-20-04.1-09.4 (discussed later in this Plan).

5. Closure Timing

Closure must be implemented within 30 days after receipt of the final volume of waste and must be completed within 108 days following the beginning of closure activities, unless otherwise specified and approved under Subsection 5. Prior to beginning closure, the owner or operator must notify the department in writing of the intent to close.

The facility will coordinate the future closure of the Inert Waste Facility with the NDDEQ. The facility will comply with the appropriate timing aspects during closure. Closure activities, in accordance with NDDEQ rules and regulations, will be implemented.

6. Closure Reporting

The owner or operator of a landfill for which closure is completed in part or whole shall enter into the operating record and submit to the department.

The facility will report the following:

7. As-built Drawings

As-built drawings showing the topography, pertinent design features, extent of waste, and other appropriate information.

The facility will retain a professional land surveyor to survey the designated cell site following the final closure. The surveyor will develop as-built drawings indicating topography, closure design features, extent of waste and other appropriate information.

8. Closure Certification

Certification by the owner or operator and a professional engineer that closure has been completed in accordance with the approved closure plan and this article.

The facility will prepare a certification report to document that the final closure of the facility has been completed in accordance with the approved closure plan and the aforementioned article. A professional engineer will certify that the closure has been completed in accordance with the approved closure plan.

9. Written Closure Plan

Each owner or operator shall prepare and implement a written closure plan approved by the department as part of the permitting process. The closure plan must:

Estimate the largest area ever requiring final cover at any time during the active life of the site.

A facility site plan is included in the enclosed figures. The disposal footprint is approximately 87.5 acres. The largest area ever requiring final cover is estimated to be about twenty (20) acres.

Estimate the maximum inventory of solid waste onsite over the active life of the facility.

The estimated remaining airspace as of April 2021 of the current disposal area (the most recent topographic update) is approximately 28,900 cubic yards.

The estimated capacity of the new disposal area (this application) is approximately 6.5 million cubic yards (less intermediate and final cover volumes).

For landfills, describe the final cover and the methods to install the cover.

In accordance with NDAC 33-20-05.1-04, the final cover will consist of two feet of earthen material, the lower 12 inches of which must be compacted clay-rich earthen material, free of cracks and extrusions of solid waste. Using earthmoving equipment, the lower 12-inch layer will be placed in compacted lifts of no more than six inches. In lieu of a two-foot-thick final cover, the facility may employ a four-foot-thick cover of clay-rich earthen material and compaction will not be required. At least six inches of suitable plan growth material will be placed over the covered landfill and planted with adaptive grasses.

Project time intervals at which sequential partial closure or closure is to be implemented.

The time intervals to implement partial closure will be largely dependent on incoming waste volumes, which may significantly vary from year to year. Subject to variations in the waste volume acceptance rate, a time interval of every three to five years would serve as an approximation for performing partial closures.

In accordance with NDAC 33-20-04.1-05.3, final closure will be implemented within 30 days after receipt of the final volume of waste and must be completed within 180 days following the beginning of closure activities, unless approved otherwise by the NDDEQ.

Describe the resources and equipment necessary for closure.

The source material for closure is found onsite. The suite has suitable soils for the compacted cap and cover materials.

The facility has the equipment necessary for operation and closure of D.B. Waste, LLC. The equipment is used for moving and spreading waste, applying and maintaining cover, compaction of soil and waste, assisting in offloading haul vehicles and site landscaping. It is operated by facility personnel who have been property trained in the operation of heavy equipment. Equipment is maintained in good operating condition.

Identify closure cost estimates and provide financial assurance mechanisms, as required by Chapter 33-20-14.

Subsection f does not apply to D.B. Waste, LLC according to NDAC 33-20-14.0.1.1.

B. NDAC 33-20-04.1-09 General Disposal Standards

1. Subsection 4. Closure Standards

Closure standards, excluding land treatment units.

The Closure Plan was prepared in accordance with NDAC 33-20-04.1-09.4, Closure Standards

2. Future Use of Inert Waste Facility

Closed solid waste management units may not be used for cultivated crops, heavy grazing, buildings, or any other use that might disturb the protective vegetation and soil cover.

The facility does not intend to use the closed waste management unit for cultivated crops. No buildings will be constructed on the closed portions of the Inert Waste Facility.

3. Final Cover Design

All solid waste management units must be closed with a final cover design.

A final cover design has been prepared for D.B. Waste, LLC. The Final Cover Plan is presented on the enclosed Figures. The design is in compliance with the following:

Permeability

Have a permeability less than, or equal to, the permeability of any bottom liner or natural subsoils present.

The natural soils in the vicinity of the facility are highly variable consisting of sands, silts, and clay zones. Accordingly, the permeability of the soils will also vary, with permeability being greatest in areas of sand. The final cover for the facility includes a clay-rich layer of earthen material that will be placed over the entire disposal area. The clay-rich layer would provide permeability that is less than the permeability of subsoil sands.

NDAC 33-20-05.1-04 Closure Criteria

Requires the following:

Closure of an existing unit must be completed, as outlined in Sections 33-20-04.1-05 and 33-20-04.1-09. All existing units must be covered with two feet (61.0 centimeters) or more of earthen material, the lower 12 inches (30.5 centimeters) of which must be compacted clay-rich earthen material, free from cracks and

extrusions of solid waste. If a cover of four feet (1.2 meters) or more of clay-rich earthen material is achieved, compaction is not required.

The closure plan was designed with a placement of at least two feet of earthen soil material. The lower 12 inches will be compacted clay-rich earthen material. The compacted soil material will be placed in six-inch lifts. Twelve inches of earthen material will be placed over the compacted soil material.

The facility may wish to place four feet of clay-rich earthen material in place of the above option. If four feet of clay-rich material is achieved, then compaction will not be necessary.

Run-on Minimization

Minimize precipitation run-on from adjacent areas.

The precipitation run-on controls described under Section 3.A.1.d. (4) of the Plan will continue to be in effect during the facility closure and post-closure periods.

Erosion and Drainage Concerns

Minimize erosion and optimize drainage of precipitation falling on the landfill. The grade of slopes may not be less than 3 percent or more than 15 percent, unless the permit applicant or permittee provides justification to show steeper slopes are stable and will not result in surface soil loss in excess of one-tenth of one percent per year for the first year and one-hundredth of one percent per year thereafter. In no instance may slopes exceed 25 percent.

The final closure will incorporate slopes exceeding three percent and no more than 25 percent. Slopes on the expansion area final cover will not exceed 15 percent.

Surface Drainage System

Provide a safe drainage system that does not adversely affect drainage from adjacent lands.

Local drainage will not be affected by the location of the facility or final closure. Local drainage patterns will remain generally unchanged. The position of the facility does not hinder or adversely affect local drainage. The expansion is placed at the highest point of two drainageways, therefore existing drainage paths will be maintained.

The facility does not adversely affect drainage from adjacent lands. A United States Geological Survey (USGS) 7.5 minute quadrangle map that indicates topography of adjacent land was viewed to confirm this situation. A Site Location Map was prepared using this USGS 7.5 minute quadrangle map and is presented in Appendix B.

4. Final Cover

The final cover must include six inches (15.2 centimeters) or more of suitable plant growth material, which must be seeded with shallow rooted grass or native vegetation.

NDAC 33-20-05.1-04 Closure Criteria

Continues as follows:

At least six inches (15.2 centimeters) of suitable plant growth material must be placed over the covered landfill and planted with adapted grasses.

A final cover of at least six inches of suitable plant growth material will be placed over the earthen material barrier layer.

The final cover will be fertilized as necessary prior to seeding with a shallow rooting grass mixture. A mulch will be placed over the newly seeded suitable plant growth material to reduce erosion and encourage water retention, if warranted.

The soils necessary for the earthen material, or the clay-rich earthen material, and the suitable plant growth material are available from soils segregated onsite during operations.

The facility will follow the Department's recommended native grass mixture to plant at the facility after placement of suitable plant growth material. The mixture is summarized in the table below.

Native Grass Mixture

Species	Lbs. PLS*/Acre
Western Wheat Grass	6
Green Needle Grass	4
Slender Wheat Grass	4
Side-Oats Grama	2
Little Bluestem	1.5
Blue Grama	1.5
Total Seed (min.)	**19**

*PLS – Pure Live Seed (based on 50 PLS/sq. feet)

5. Beneficial Uses

The department may allow, on a case-by-case basis, the use of closed inert waste landfill sites for certain beneficial uses that would not pose a threat to human health or the environment.

The facility has no specific plans for the future use of the closed waste management unit. The unit will likely be maintained as open space.

6.0 POST-CLOSURE CRITERIA

A. NDAC 33-20-05.1-05 Post-closure Criteria

Owners or operators of inert waste landfills shall conduct annual post-closure inspections for a period of five years after closure.

The owner/operator will conduct annual post-closure inspections at D.B. Waste, LLC for a period of five years after closure. These inspections will be performed to assess the integrity of the final cover and status of the vegetation seeded to the suitable plant growth material.

The owner/operator will maintain the final cover should repairs become necessary. The owner/operator will also reseed areas of the facility to the chosen grass seeding mixture where the original seeding did not catch.

Appendix A

Property Deeds and Easement Documents
Local Zoning Documents
Certificate of Insurance

NORTH DAKOTA GUARA WD 13.00

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Page: 1 of 2
03/11/2003 02:03P
Burleigh County

Taxes and special assessments paid and TRANSFER accepted this 11 day of March, 2003
Burleigh County Auditor
By
Deputy, Burleigh County Auditor

COUNTY RECORDER
BURLEIGH COUNTY ND

File No. B38140

ND GUARANTY & TITLE CO.

WARRANTY DEED

THIS INDENTURE is made this 7th day of March, 2003, between **James L. Hoge and Janice A. Hoge, husband and wife,** grantor, whether one or more, and **D.B. Waste, LLC,** grantee, whose post office address is 311 South 7th Street, Bismarck, ND 58504.

WITNESSETH, For and in consideration of the sum of One Dollar and other good and valuable consideration, grantor does hereby **GRANT** to the grantee, all of the following real property in the County of **BURLEIGH,** State of North Dakota, described as follows:

23-140-81-00-12-400

South One-half of the South One-half of the Northwest one-quarter (S½S½NW¼) of Section Twelve (12), Township One Hundred Forty (140) North, Range Eighty-one (81) West of the Fifth Principal Meridian, Burleigh County, North Dakota.

Excepting and reserving to the Grantors an undivided Fifty Percent (50%) interest in and to all minerals including gravel, clay and scoria.

Subject to easements of record or which may exist in fact, mineral reservations and restrictive covenants, if any.

The grantee by presentation of this instrument for recording with the County Recorder certifies that the current sales price of the property described within this instrument is $100,000.00.

X

The grantors for themselves, their heirs, executors and administrators, do covenant with the grantee that they are well seized in fee of the land and premises and have good right to sell and convey the same; that the same are free from all encumbrances, except installments of special assessments or assessments for special improvements which have not been certified to the County Auditor for collection, and the above granted lands and premises in the quiet and peaceable possession of the grantee, against all persons lawfully claiming or to claim the whole or any part thereof, the grantors will warrant and defend.

WITNESS, The hand of the Grantors:

JAMES L. HOGE

JANICE A. HOGE

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF BURLEIGH)

On this 7th day of March, 2003, before me, a notary public, personally appeared **James L. Hoge and Janice A. Hoge, husband and wife**, known to me to be the persons who are described in and who executed the foregoing instrument, and acknowledged to me that they executed the same.

(SEAL)

JANET M. SCHWAN
Notary Public
State of North Dakota
My Commission Expires Sept. 20, 2008

Notary Public,
_____ County, _____
My Commission Expires: _____

CONTRACT FOR DEED

ND GUARANTY & TITLE CO. B38140

THIS AGREEMENT is made by and between James and Jan Hoge, hereinafter referred to as the "Sellers", whose post office address is 8636 Island Road, Bismarck, North Dakota 58503, and David Barth and D.B. WASTE, LLC, a North Dakota limited liability company, hereafter referred to as the "Buyers," whose post office address is 311 South 7th Street, Bismarck, North Dakota 58504.

PROVISIONS

1. Legal Description: The Sellers agrees to sell and the Buyers agree to purchase the property described on Exhibit "A" attached hereto.

2. Price and Manner of Payment: The total purchase price of Three Hundred Eighty Thousand Dollars ($380,000) is to be paid as follows:

(a) The amount and date of the down payment is One Hundred Thousand Dollars ($100,000) paid on March 3, 2003.

(b) The remaining Two Hundred Eighty Thousand Dollars ($280,000) shall be paid, with interest at six percent (6%) per annum, in equal monthly payments amortized over a period of ten (10) years from January 1, 2004, each payment in the amount of Three Thousand One Hundred Eight and 59/100 Dollars ($3,108.59). The first such payment shall be due February 1, 2004. No interest shall accrue on the

balance of the purchase price until January 1, 2004.

3. Additional Payment Provisions: Buyers may not prepay this Contract for Deed without the written consent of the Sellers.

4. Possession of the Premises: The Buyers shall obtain possession of the S1/2 of the S1/2 of the NW1/4 of Section 12, Township 140, Range 81, on March 3, 2003. Possession of the remainder of the property shall not be delivered until January 1, 2004. Sellers shall be entitled to retain both possession of the remainder of the Hoge property, and any rents or income therefrom, for the year 2003.

5. Taxes, Assessments and Insurance:

(a) Buyers shall pay all taxes and annual installments of special assessments of the S1/2 of the S1/2 of the NW1/4 of Section 12, Township 140, Range 81, beginning with those taxes and annual installments of special assessments assessed for the year 2004, and due and payable in 2005, and all payments thereafter on such property so long as this contract shall be enforced. Buyers shall pay all taxes and annual installments of special assessments on the remainder of the property beginning with those taxes and annual installments of special assessments assessed for the year 2004 and due and payable in the year 2005. Sellers shall pay all taxes and the annual installments of special assessments for the property assessed for the year 2003, due and payable in the year

2004, for all the property except the S1/2 of the S1/2 of the NW1/4 of Section 12, Township 140, Range 81. Taxes and annual installments of special assessments for the year 2003, due and payable in 2004, for the S1/2 of the S1/2 of the NW1/4 of Section 12, Township 140, Range 81, shall be prorated to the date of closing.

(b) The buildings on said premises shall be kept insured for fire, wind and tornado, by a reliable company at the expense of the Buyers for an insured valuation equal to its fair market value, but in no event less the amount due on this Contract for Deed, with the loss clause thereof payable to Sellers to the extent of their interest at the time of loss. Should the Buyers fail to make payment of taxes, assessments or insurance, they may be paid by the Sellers and added to the amount of unpaid principal with interest accrued at the same rate specified in the contract.

6. Assignment of Interest: The Buyers will not assign their interest in the property without written consent of the Sellers, which consent shall not be unreasonably withheld.

7. Default: It is mutually understood and agreed that in case of the failure on the part of the Buyers to do or perform any and all of the covenants and agreements herein agreed to be performed, or in the event of the failure of the Buyers to perform all of the covenants and agreements contained in the Security Agreement dated January 1, 2003, between the Buyers and James Hoge

and related to a 1992 John Deere 624E Loader, or in the event of the failure on the part of the Buyers to do or perform any and all of the covenants and agreements contained in a separate Contract for Deed between Buyers and Dakota Landfill, Inc. related to property located within Section 12, Township 140, Range 81, which Contract for Deed is dated March 3, 2003, such failure shall entitle Sellers, at their option, to declare the entire indebtedness owing hereunder immediately due and payable and to cancel this Contract for Deed in accordance with the laws of the State of North Dakota. In the event of the cancellation of this Contract for Deed, all payments theretofore made hereunder by the Buyers or assignees, shall be kept and retained by said Sellers or assignees, for the use of said Buyers and assignees as and for its liquidated and agreed damages by reason of the cancellation of this Contract for Deed.

8. Additional Provisions:

(a) The Sellers have provided the Buyers sufficient evidence of marketable title.

(b) The Sellers shall provide upon full compliance with this Contract for Deed, a Warranty Deed, subject to (1) covenants or easement of record, (2) any special assessments not yet certified for collection, and (3) any encumbrances or liens created by or through the Buyers.

(c) It is mutually agreed, by and between the parties to this contract, with respect to the execution of agreements herein contained that time shall be of the essence and that the provisions and agreements of this contract shall remain with the land and bind the heirs, executors, administrators, and assignees of the respective parties to this contract.

In testimony whereof, the parties to this contract have placed their signature(s) this 13 day of Jan, 2003.

James Hoge

Jan Hoge

David Barth, Personally

D.B. WASTE, LLC

By: David Barth
David Barth, Its Manager

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF BURLEIGH)

On the 13th day of January, 2003, before me a Notary Public within and for said County and State personally appeared James Hoge and Jan Hoge, known to me to be the persons who are described in and who executed the within and foregoing instrument and severally acknowledged that they executed the same.

ELIZABETH STACK
Notary Public
State of North Dakota
My Commission Expires Sept. 29, 2007

Elizabeth Stack
Notary Public
Burleigh County, North Dakota
My Commission Expires: 9-29-07

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF BURLEIGH)

On the 13th day of January, 2003, before me a Notary Public within and for said County and State personally appeared David Barth, known to me to be the person who is described in and who executed the within and foregoing instrument and severally acknowledged that he executed the same.

ELIZABETH STACK
Notary Public
State of North Dakota
My Commission Expires Sept. 29, 2007

Elizabeth Stack
Notary Public
Burleigh County, North Dakota
My Commission Expires: 9-29-07

P:\LKIRMIS\HOGE\CONTRACT FOR DEED A REVISED.1.8.03.DOC

Excepting and reserving to the Grantors an undivided Fifty Percent (50%) interest in and to all minerals including gravel, clay and scoria.

DLB
3-7-03

3-7-03 3-7-03

I hereby certify that the full consideration paid for this property is
$ 380,000.00
Date 3/11/03
J Schwan, agent

Taxes and special assessments paid and TRANSFER accepted this 11 day of March 2003
Kevin J Glatt
Burleigh County Auditor
By Janet L Aldenio
Deputy, Burleigh County Auditor

LEGAL DESCRIPTION FOR HOGES' PROPERTY

EXHIBIT A

S1/2 of the S1/2 of the NW1/4 of Section 12, Township 140, Range 81

S1/2 of the NE1/4
N1/2 of the SE1/4
SE1/4 of the NW1/4
NE1/4 of the SW1/4 all in Section 11, Township 140, Range 81

N1/2 of the SW1/4 of the NW1/4
N1/2 of the SE1/4 of the NW1/4 of Section 12, Township 140, Range 81

COUNTY RECORDER
BURLEIGH COUNTY ND

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CONTRACT FOR DEED

B38140
ND GUARANTY & TITLE CO.

THIS AGREEMENT is made by and between Dakota Landfill, Inc., hereinafter referred to as the "Seller", whose post office address is 8636 Island Rd. Bismarck, North Dakota 58503, and David Barth and D.B. WASTE, LLC, a North Dakota limited liability company, hereafter referred to as the "Buyers," whose post office address is 311 South 7th Street, Bismarck, North Dakota 58504.

PROVISIONS

1. Legal Description: The Seller agrees to sell and the Buyers agree to purchase the property described on Exhibit "B" attached hereto.

2. Price and Manner of Payment: The total purchase price of Seventy Thousand Dollars ($70,000) is to be paid as follows: In equal amortized monthly installments of principal, plus interest at the rate of seven percent (7%) per annum for a period of five (5) years in the amount of One Thousand Three Hundred Eighty-Six Dollars and 80/00 ($1,386.80) per month with first payment due April 3, 2003.

3. Additional Payment Provisions: Buyers may not prepay this Contract for Deed without the written consent of the Seller.

4. Possession of the Premises: They will take possession of the premise March 3, 2003.

5. Taxes, Assessments and Insurance:

(a) Buyers are to pay all annual installments of special assessments for the year 2004 and thereafter. Taxes and annual

installments of specials assessments for the year 2003 shall be prorated to the date of closing.

(b) The buildings on said premises shall be kept insured for fire, wind and tornado, by a reliable company at the expense of the Buyers for an insured valuation equal to its fair market value, but in no event less the amount due on this Contract for Deed, with the loss clause thereof payable to Seller to the extent of its interest at the time of loss. Should the Buyers fail to make payment of taxes, assessments or insurance, they may be paid by the Seller and added to the amount of unpaid principal with interest accrued at the same rate specified in the contract.

6. Assignment of Interest: The Buyers will not assign their interest in the property without written consent of the Seller, which consent shall not be unreasonably withheld.

7. Default: It is mutually understood and agreed that in case of the failure on the part of the Buyers to do or perform any and all of the covenants and agreements herein agreed to be performed, or in the event of the failure of the Buyers to perform all of the covenants and agreements contained in the Security Agreement dated January 1, 2003, between the Buyers and James and Jan Hoge related to a 1992 John Deere 624E Loader, or in the event of the failure on the part of the Buyers to do or perform any and all of the covenants and agreements contained in a separate Contract for Deed between Buyers and James and Jan Hoge related to

property located within Section 12, Township 140, Range 81, which Contract for Deed is dated March 3, 2003, such failure shall entitle Seller, at its option, to declare the entire indebtedness owing hereunder immediately due and payable and to cancel this Contract for Deed in accordance with the laws of the State of North Dakota. In the event of the cancellation of this Contract for Deed, all payments theretofore made hereunder by the Buyers or assignees, shall be kept and retained by said Seller or assignees, for the use of said Buyers and assignees as and for its liquidated and agreed damages by reason of the cancellation of this Contract for Deed.

8. Additional Provisions:

(a) The Seller has provided the Buyers sufficient evidence of marketable title.

(b) The Seller shall provide upon full compliance with this Contract for Deed, a Warranty Deed subject to (1) any covenants or easements of record, (2) any special assessments not yet certified for collection, and (3) any encumbrances or liens created by or through the Buyers.

(c) It is mutually agreed, by and between the parties to this contract, with respect to the execution of agreements herein contained that time shall be of the essence and that the provisions and agreements of this contract shall remain with the land and bind

(b) The Seller shall provide upon full compliance with this Contract for Deed, a Warranty Deed subject to (1) any covenants or easements of record, (2) any special assessments not yet certified for collection, and (3) any encumbrances or liens created by or through the Buyers.

(c) It is mutually agreed, by and between the parties to this contract, with respect to the execution of agreements herein contained that time shall be of the essence and that the provisions and agreements of this contract shall remain with the land and bind the heirs, executors, administrators, and assignees of the respective parties to this contract.

In testimony whereof, the parties to this contract have placed their signature(s) this 13 day of JAN, 2003.

DAKOTA LANDFILL, INC.

By: _____
Its: Pres

_____
David Barth, Personally

D.B. WASTE, LLC

By: _____
David Barth, Its Manager

Taxes and special assessments paid and TRANSFER accepted this 11 day of March, 2003

_____
Burleigh County Auditor

By _____
Deputy, Burleigh County Auditor

I hereby certify that the full consideration paid for this property is $ 70,000.00

Date 3-7-03

J Schwan, agent

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF BURLEIGH)

On the 13th day of JANUARY, 2003, before me a Notary Public within and for said County and State personally appeared James Hoge, known to me to be the persons who described in and who executed the within and foregoing instrument and severally acknowledged that they executed the same.

ELIZABETH STACK
Notary Public
State of North Dakota
My Commission Expires Sept. 29, 2007

Elizabeth Stack
Notary Public
Burleigh County, North Dakota
My Commission Expires: 9-29-07

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF BURLEIGH)

On the 13th day of JANUARY, 2003, before me a Notary Public within and for said County and State personally appeared David Barth, known to me to be the person who is described in and who executed the within and foregoing instrument and severally acknowledged that he executed the same.

ELIZABETH STACK
Notary Public
State of North Dakota
My Commission Expires Sept. 29, 2007

Elizabeth Stack
Notary Public
Burleigh County, North Dakota
My Commission Expires: 9-29-07

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Excepting and reserving to the Grantors an undivided Fifty Percent (50%) interest in and to all minerals including gravel, clay and scoria.

3-7-03 DKB

3-7-03

3.7.03

LEGAL DESCRIPTION FOR DAKOTA PROPERTY

EXHIBIT B

N1/2 of the SW1/4 of Section 12, Township 140, Range 81

23 - 140-81-00-12-408

COUNTY RECORDER
BURLEIGH COUNTY ND

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RIGHT-OF-WAY EASEMENT

WHEREAS, James L. Hoge and Janice A. Hoge, husband and wife, whose post office address is 8567 Island Road, Bismarck, North Dakota, 58501-9202, (hereinafter referred to as "Grantors") own as joint tenants, with right of survivorship, the following described real property situated in Township 140 North, Range 81 West, in Burleigh County, North Dakota:

TRACT NO. 1: S½NW¼, NE¼NW¼ and N½SW¼ of Section 12; and

TRACT NO. 2: NW¼NW¼, S½N½ and N½S½ of Section 11.

WHEREAS, the Grantors' desire to convey a right-of-way easement across Tract No. 1 for the purpose of providing ingress and egress to Tract No. 2 from the existing county road which is situated along the east boundary line of Tract No. 1

NOW, THEREFORE, Grantors for valuable consideration received and the mutual agreements and covenants contained herein, convey unto themselves, and all successors in interest to Tract No. 2 a right-of-way easement across Tract No. 1, more fully described hereinafter, to be used by them and their successors for the purpose of providing ingress and egress to Tract No. 2.

This easement consists of an 80-foot wide tract of land located 40 feet on each side of the east-west quarter boundary line which runs between the NW¼ and the SW¼ of Section 12, running the total distance of said boundary line of approximately 2,640 feet. Said easement contains approximately 211,200 square feet, more or less.

The owners of Tract No. 2 shall have the right to build or maintain any structure on said area or to change the grade in and around the easement as may be necessary to accommodate vehicular traffic across the easement.

This easement shall continue for a term of 99 years and the agreements herein contained shall run with the land and be appurtenant thereto, and shall inure to the benefit of, and be binding upon, the parties hereto and their respective heirs, successors and assigns, including, but without limitation, all subsequent owners of Tract Nos. 1 and 2.

Dated this 13 day of May, 1994.

James L. Hoge
JAMES L. HOGE

Janice A Hoge
JANICE A. HOGE

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF BURLEIGH)

On this 13 day of May, 1994, before me personally appeared JAMES L. HOGE and JANICE A. HOGE, known to me to be the persons who are described in, and who executed the foregoing instrument, and severally acknowledged that they executed the same.

BRADLEY D. LEGREID NOTARY PUBLIC STATE OF NORTH DAKOTA

Notary Public
My commission expires:

BRADLEY D. LEGREID
Notary Public, STATE OF NORTH DAKOTA
My Commission Expires MAY 28, 1994

STATE OF NORTH DAKOTA } SS
COUNTY OF BURLEIGH, }
I hereby certify that the within instrument was filed in this office for record on the 16 day of MAY 1994 A.D. 19..... at 11:10 o'clock A. M. and was duly recorded. 461810

REGISTER OF DEEDS
Deputy

$10.00

NORTH DAKOTA GUARANTY
& TITLE COMPANY
400 E. BROADWAY, SUITE #409
BISMARCK, ND 58501 (701) 223-6835
BC/st

ORDINANCE 83-01

AN ORDINANCE TO AMEND AND RE-ENACT ARTICLE 9 OF THE 1972 AMENDED ZONING ORDINANCE OF BURLEIGH COUNTY, NORTH DAKOTA.

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF BURLEIGH COUNTY, NORTH DAKOTA:

Section 1. Special Use Permit Approved. The following special use permit was approved on 5 January 1983:

To Larry and James Hoge to operate a sanitary landfill on 700 acres described as S½ of S½ of NE¼, S½ of SE¼ of NW¼, NE¼ of SW¼, N½ of SE¼, and SE¼ of SE¼, all in Section 11; and S½ of S½ of NW¼ and SW¼ of Section 12; and NE¼ and N½ of NW¼ of Section 13; and NE¼ of NE¼ of Section 14; all the preceeding in Riverview Township (140N-81W) for a period of 50 years.

Section 2. Repeal. All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed.

Section 3. Taking Effect. This ordinance shall be in full force and effect from and after its final passage and adoption.

Final Passage and Adoption: 5 January 1983

/jms

DBWASTE-01 RGANGL

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 4/23/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Ronda Gangl	
Vaaler Insurance Inc PO Box 933 Bismarck, ND 58504	PHONE (A/C, No, Ext): (701) 258-2800	FAX (A/C, No): (701) 258-2838
	E-MAIL ADDRESS: rgangl@vaaler.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Admiral Insurance Company	24856
INSURED DB Waste LLC Dave Barth 311 South 7th Street Bismarck, ND 58504	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY							
	[ ] CLAIMS-MADE [X] OCCUR			FEI-EIL-21060-06	2/13/2021	2/13/2022	EACH OCCURRENCE	$ 1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 50,000
							MED EXP (Any one person)	$ 5,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	X POLICY [ ] PRO-JECT [ ] LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB [ ] OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB [ ] CLAIMS-MADE						AGGREGATE	$
	DED RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						PER STATUTE / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [ ] (Mandatory in NH)	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

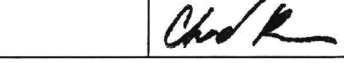
CERTIFICATE HOLDER

DB Waste LLC
311 S 7th Street
Bismarck, ND 58504

CANCELLATION

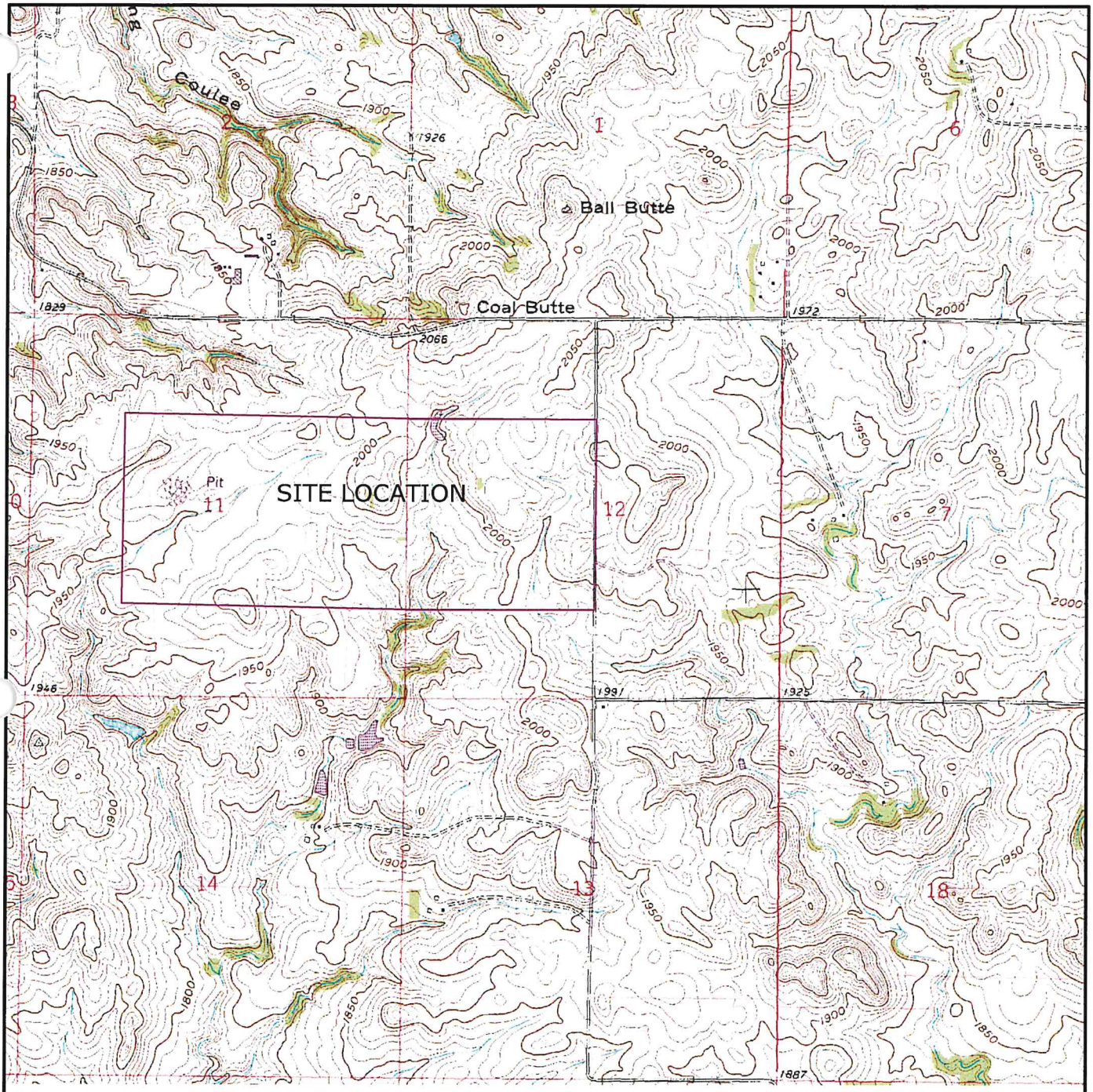
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



Appendix B

General Site Information
Figure 1 – USGS Topo Map
Figure 2 – Land Ownership Map
Figure 3 – County Road Map
Figure 4 – Aerial Photo

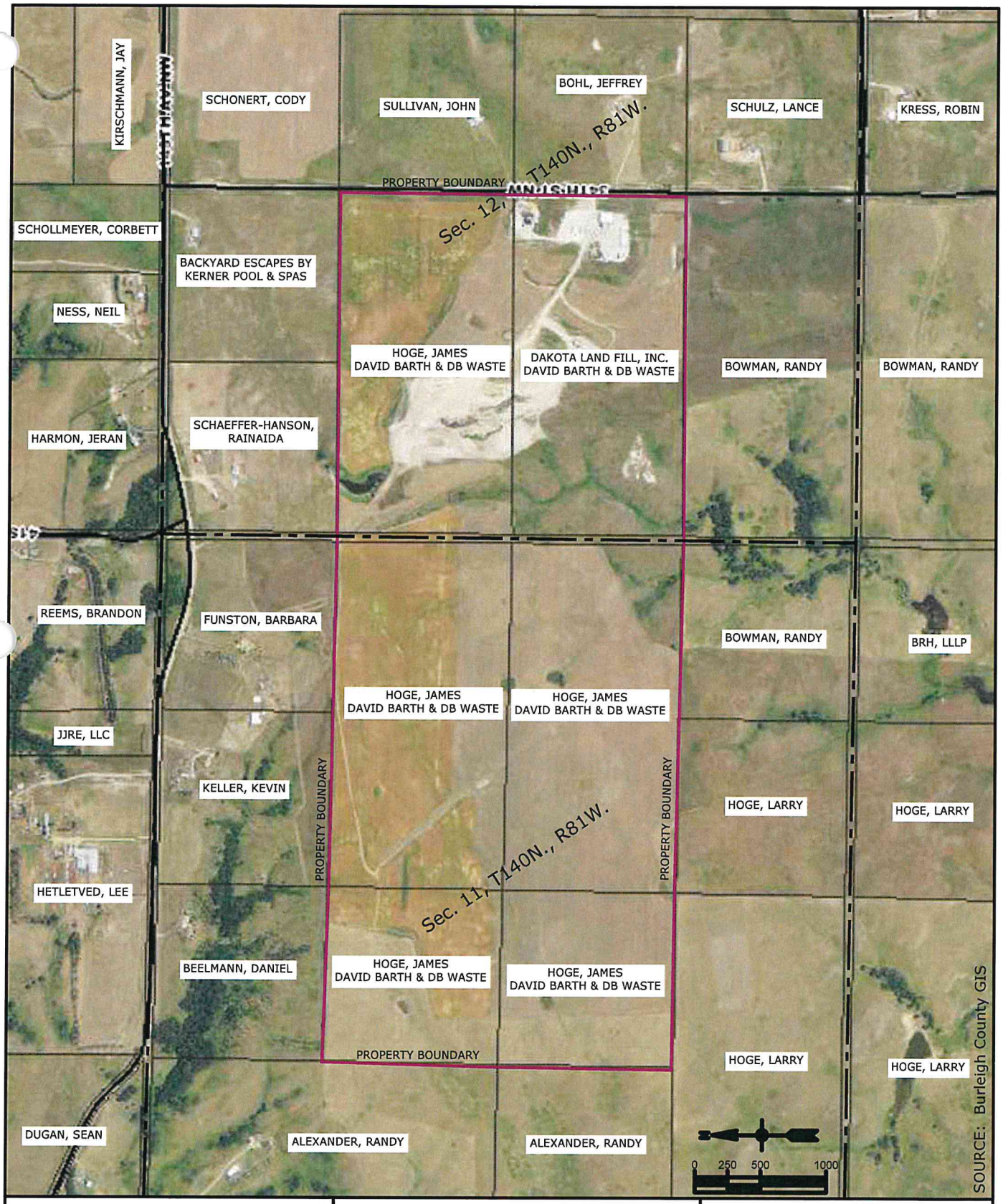


SOURCE: USGS Burnt Butte 7.5 MIN. QUADRANGLE

CARLSON McCAIN
ENGINEERING SURVEYING ENVIRONMENTAL

DB WASTE, LLC
INERT WASTE FACILITY
Burleigh County, ND

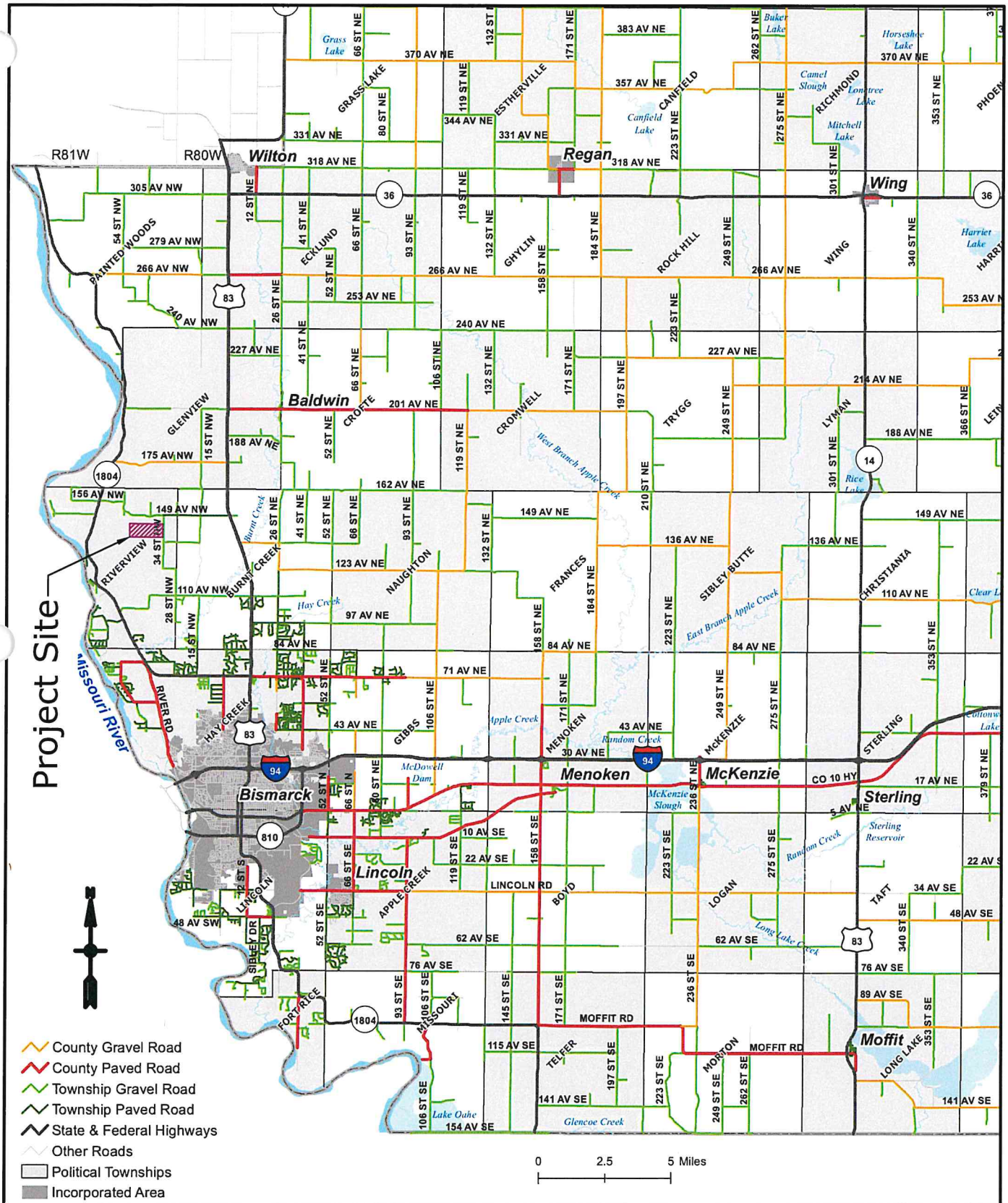
FIGURE 1
USGS Topo Map



CARLSON McCAIN
ENGINEERING SURVEYING ENVIRONMENTAL

DB WASTE, LLC
INERT WASTE FACILITY
Burleigh County, ND

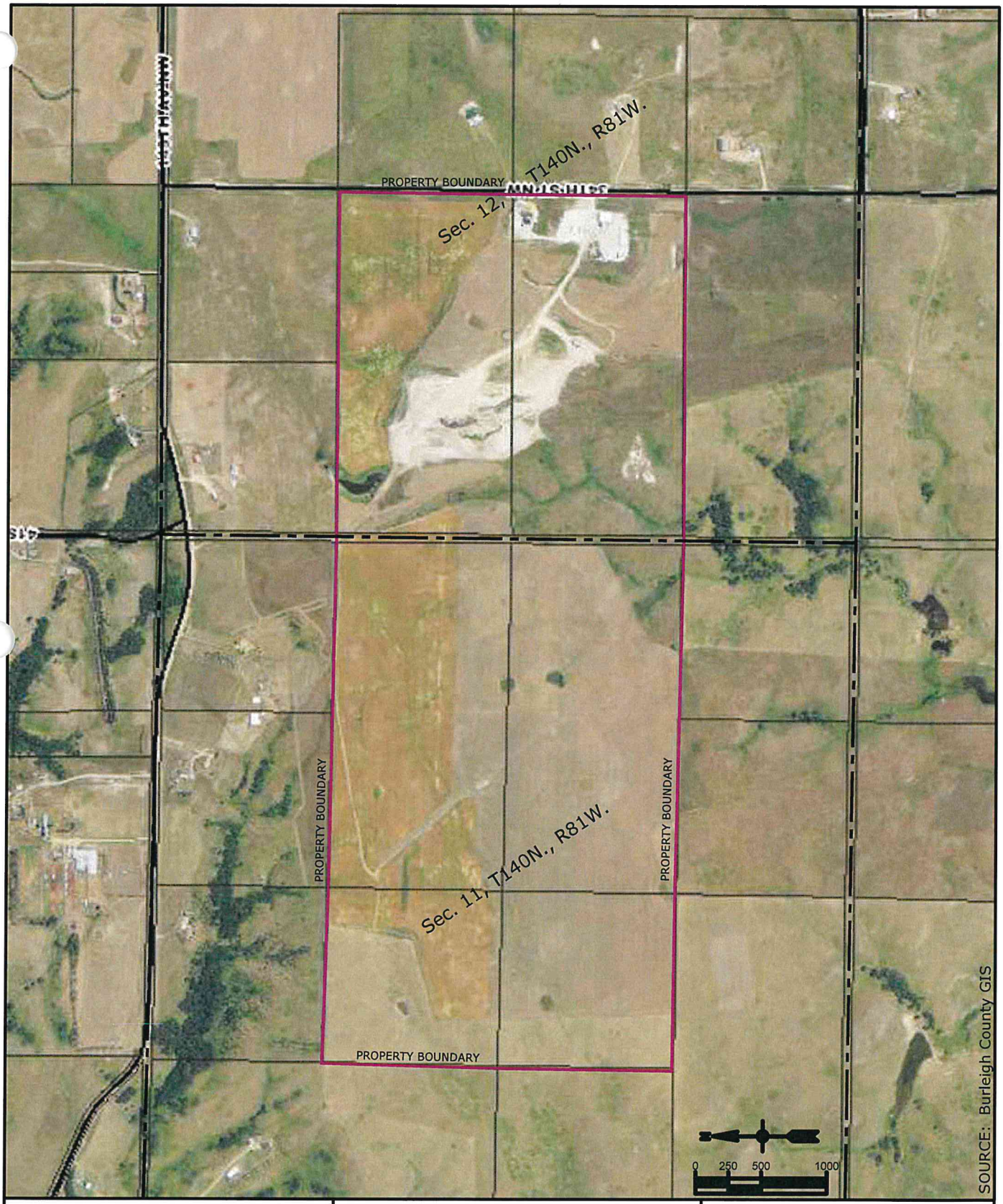
FIGURE 2
Land Ownership Map



CARLSON McCAIN
ENGINEERING SURVEYING ENVIRONMENTAL

DB WASTE, LLC
INERT WASTE FACILITY
Burleigh County, ND

FIGURE 3
County Road Map



CARLSON McCAIN
ENGINEERING SURVEYING ENVIRONMENTAL

DB WASTE, LLC
INERT WASTE FACILITY
Burleigh County, ND

FIGURE 4
Aerial Photo

Appendix C

Daily Log of Operations
Random Load Inspection Form
Guidelines for Accepted/Rejected Waste

DB Waste Daily Log of Operations

Today's Date: _____
Facility Opened today (time): _____
List Weather Conditions on this day: _____
List of Equipment in Operation Today: _____

Describe Landfill Operation(s) today. Attach load inspection form and pictures (page 2):

The Facility Operator shall inspect the facility daily for compliance with the applicable regulations including but not limited to the following.

Place an (X) on the line next to all aspects of facility operations which have been inspected today

Operation of Facility

_____ Maintain access roads
_____ Limited access to facility
_____ Signs posted
_____ Adequate Fire Equipment
_____ Operable and adequate equipment
_____ Trained Employees
_____ Preparation for inclement weather
_____ Confined Unloading
_____ Separation/control of flammable waste
_____ Compacting bulky items
_____ Minimizing dust generation
_____ Load inspection(s)
_____ Control of scattered litter
_____ Keeping of Daily Log
_____ Daily Cover
_____ Surface Water Diversion
_____ Correct ponding/erosion

Waste Received Today (tons)

_____ Yard Waste
_____ Tire shred/scrap tires
_____ Lime Sludge
_____ Construction Debris
_____ Other (_____)

Corrective Actions Taken and Other Comments: _____

_____
Signature of Person Completing Form

_____
Print Name of Person Completing Form

Retain this form in file for three years for inspection by the NDDEQ or an authorized representative.

Attach Random Load Inspection Form and/or Picture(s)

RANDOM LOAD INSPECTION FORM

D.B. Waste, LLC

DATE _____ TIME _____ VOLUME _____

Waste Contents: _____

_____

_____

Restricted Waste Encountered: _____

_____

Mitigation Actions: _____

Rejection of Restricted Waste: _____

SIGNED: _____ DATED: _____

DATE _____ TIME _____ VOLUME _____

Waste Contents: _____

_____

_____

Restricted Waste Encountered: _____

_____

Mitigation Actions: _____

Rejection of Restricted Waste: _____

SIGNED: _____ DATED: _____

DATE _____ TIME _____ VOLUME _____

Waste Contents: _____

_____

_____

Restricted Waste Encountered: _____

_____

Mitigation Actions: _____

Rejection of Restricted Waste: _____

SIGNED: _____ DATED: _____

Guidelines for Accepted/Rejected Waste
D.B. Waste, LLC

According to State regulations, certain types of waste cannot be accepted for disposal at the inert waste facility. The following list describes those restrictions.

Acceptable Waste	Unacceptable Waste
• Inert Waste: Examples are metal products, wood products, brick products, masonry products, cement, cured concrete, asphalt, tires, tree branches, bottom ash from coal-fired boilers. (This does not include special waste, industrial waste or any of the restricted materials) • Waste coal fines from air pollution equipment. • Fiberglass, urethane, polyurethane and epoxy resin waste when mixed with construction debris. • Metal waste that does not contain oils, solvents, PCBs or other similar materials. • Grass and leaves (accepted and set aside for composting). • Trees (accepted and landfilled). • Tires (accepted and set aside for shredding to use as a cover material or landfilling). *These materials are accepted only if delivered to the Inert Waste Facility and refrigerant has been removed.*	• Asbestos, garbage, putrescible or house hold or municipal waste. • Hazardous waste including ignitables (solvents, paints & fuel), corrosives (Acids & alkalies), reactives, toxicity characteristics and listed wastes. • Industrial waste, if not addressed in the industrial waste management plan and the permit. • Lead acid batteries. • Liquids. • Bulk chemical containers (Exception-triple rinsed & punctured pesticides will be accepted). • Polychlorinated biphenyls (PCB) waste/oil including transformers from fluorescent lights. • Raw or digested sewage sludge, lime sludge, grit chamber cleanings, animal manure, septic tank pumpings, bar screenings and other sludge. • Regulated infectious waste, except in household amounts. • Special waste • Used oil (none-including household amounts) • Radioactive waste • Rendering and slaughterhouse waste • Foundry ash • Spent activated carbon filters • Paint waste • Fiberglass, urethane, polyurethane or epoxy resin waste • Oil & gas exploration and production waste • Contaminated soil waste • Soluable wastes (fly ash, salt, etc) • Animal carcasses • Waste grain, seed and elevator screenings *The North Dakota Department of Health has established the above list of restricted wastes. The Inert Waste Facility does not accept these wastes for landfilling. This list may be subject to changes as rules are revised or as wastes are approved or disapproved by the Department.*

Signed: _____ Date: _____

Printed Name: _____

Appendix D

Site Safety Plan

D.B. Waste, LLC
Site Safety Plan

Site Safety Plan
D.B. Waste, LLC
Bismarck, ND

Table of Contents

Site Safety Plan
D.B. Waste, LLC
Bismarck, ND

A. Site Description: An Inert Waste Facility operated and owned by D.B. Waste, LLC.

Site Location: The facility is situated on a parcel of property comprising about 297 acres. The facility is located in portions of Sec. 12 & 13, T. 140N, R. 81W. of Burleigh County.

Surrounding Population: The D.B. Waste, LLC Inert Waste Facility is located approximately 8 miles north of the City of Bismarck, North Dakota and 2 ½ miles west of United States Highway 83. The remaining population is rural.

Additional Information: The site has operated as an inert waste facility since being permitted by the North Dakota State Department of Health. Contents of the facility are inert waste.

B. Entry Objectives:

The objective of entering the Inert Waste Facility is to handle inert waste under the terms of permit conditions.

Actions: Inert waste is off loaded from the haul vehicles and placed in the landfill facility. Inert waste is covered on a semi-annual basis in an effort to control debris and associated hazards. Cover may be applied more frequently depending on conditions.

Tasks: The following tasks are anticipated at the facility:

- Handling inert waste.
- Operating heavy equipment for covering and compacting waste.
- Operating the equipment for placing final cover.
- Seeding with suitable plant species.
- Maintenance of site equipment and structures.
- Maintenance of disposal and operating records.
- Monitoring the facility for necessary corrective actions.
- Post-Closure monitoring.

C. On-Site Organization & Coordination:

D.B. Waste, LLC
Site Leader, Site Safety Officer & Primary Contact: David Barth
311 South 7th Street
Bismarck, ND 58504
Cell# (701) 319-0777

Secondary Contact: Lee Fergel
5019 Driftwood Lane
Bismarck, ND 58503
Cell# (701) 527-0096

Federal Agency Representative
United States Environmental Protection Agency
Solid Waste Section, Region VIII
999 18th Street, Suite 500
Denver, CO 80202-2466
(303) 293-1660

State Agency Representative
ND Department of Environmental Quality
Division of Waste Management
1200 Missouri Avenue, Room 302
Bismarck, ND 58502-5520
701-328-5150

North Dakota State Department of Emergency Management
Bismarck, ND 58501
(800) 773-3259

Local Fire Response
City of Bismarck Rural Fire Department
Fire Chief
Bismarck, ND 58501
#911

Hospitals:
Sanford
300 North 7th Street
Bismarck, ND 58501
(701) 323-6000

CHI St. Alexius
900 Easte Broadway
Bismarck, ND 58501
(701) 530-7001

Ambulance Service
Metro Area Ambulance Service, Inc.
P.O. Box 595
Mandan, ND 58554
911 or # (701) 223-1310

Emergency Contractor
Northern Improvement Company
3320 E. Century Avenue
Bismarck, ND
(701) 223-6695

D. On-Site Control

In the case of an emergency, the Site Leader or Safety Officer will coordinate access control and security at the Inert Waste Facility. No unauthorized personnel will be allowed access beyond the facility entrance.

The immediate Exclusion Zone, during any emergency, will be the facility fence line. The fence line is periodically surveyed for damage or signs of illegal intrusion. The necessary zones for facility corrective actions will be determined on a case-by-case basis with the aforementioned Exclusion Zone preset.

E. Hazard Evaluation

The following general waste is known to be on-site Inert Waste

Although unlikely for an inert waste facility, the occurrence of specific chemicals, including concentrations, is unknown. Therefore, any hazards represented by any unknown chemical cannot be determined.

Additional hazards that may be encountered would be physical in nature, including:

- Fire or explosion
- Uneven ground surface
- Occasional slippery surfaces
- Moving equipment
- Open excavations
- Heat/cold stress and exposure

F. Personal Protective Equipment

First-aid equipment and fire extinguishers shall be available and supplied by D.B. Waste LLC. All facility vehicles are equipped with fire extinguishers. Personal protective equipment may be necessary in the case of an emergency. If a situation occurs which requires hazardous material response training above Level D personal protective equipment, emergency response personnel with the required training and certifications will be called.

G. On-Site Work Plans

Activities requiring response to the Inert Waste Facility are listed below. AU activities will be coordinated by the Safety Office or Site Leader.

Fire: Northern Improvement may be contacted to assist in dirt hauling to smother controlled fires. The City of Bismarck Rural Fire Department will be contacted in the event of explosions. In the event of such an occurrence, the North Dakota State Department of Emergency Management will be consulted regarding corrective actions.

Leak:

D.B. Waste LLC will direct leak suppression, containment and cleanup activities.

Groundwater Contamination: In the event of identified groundwater contamination, the North Dakota Department of Environmental Quality will be contacted in accordance with state regulations. Response will be directed on a case-by-case basis.

Blowing dust/debris: The facility will coordinate the mitigation of these conditions. Water will be put down on areas experiencing soil erosion by wind. Temporary soil and/or tire shred cover will be placed at more frequent intervals, as necessary, to control movement of waste by high winds. Wind fences will be moved according to the prevailing wind.

All personnel performing potentially hazardous work at the facility will be provided a copy of this plan to review on an annual basis and sign.

H. Communication Procedures:

Telephone will be the primary communication tool for the facility. Telephone numbers of the appropriate persons, or agencies, are in Sections C and J of this plan. The primary and secondary facility contacts are including in Section C. Other company personnel may also be contacted to communicate and advise on emergencies and response activities.

Three loud horn blasts will be the warning signal to evacuate the Inert Waste Facility. The following standard hand signals will be used in case of failure, or inability, of other communication methods on site:

SIGNAL	MEANING
Hand gripping throat	Out of air -cannot breathe
Grip partner's wrist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	Ok, I am all right, I understand
Thumbs down	No, negative

In the event of an emergency call the Site Safety Officer at home/work # (701)226-1611 or # (701) 527-0096 as soon as possible.

I. Decontamination Procedures

In the event of a serious contaminating emergency involving hazardous substances, facility personnel are to evacuate the site, remove their work clothing and shower using a mild soap for at least 15 minutes. Contaminated clothing should be washed before re-use. If the clothing is grossly contaminated, it will be discarded in a safe manner, such as double bagging in plastic heavy duty trash bags. Hands and any other body parts that come in contact with contaminated clothes should be thoroughly washed. In the event of a serious contaminating emergencies involving hazardous substances, the North Dakota Department of Health and Department of Emergency Management will be consulted regarding corrective actions.

J. Site Safety and Health Plan

1.) The Site Safety Officer is directly responsible to the Site Leader for safety recommendations on-site.
2.) The CHI St. Alexius Medical Center at 900 East Broadway # (701) 530-7001 or Sanford at 300 North 7th Street, Bismarck, ND # (701) 323-6000 will be contacted in the event of a medical emergency. The condition of the emergency is to be communicated to the emergency staff that will respond to the victim(s). Environmental conditions may play a role and handling of the victim(s) will affect emergency care. Local ambulance service is from the Metro Area Ambulance at # (701) 223-1310.

Below are the emergency contact telephone numbers for the facility. The emergency response agencies to be notified shall be based on the nature of the emergency, as described in this plan.

Sheriff (Burleigh County Sheriff's Dept.)	911 or 222-6727
Fire (Burleigh County Rural Fire Dept.)	911 or 258-5792
Sanford	323-6000
CHI St. Alexius Emergency and Trauma	530-7001

Metro Area Ambulance	911 or 663-6969
ND Department of Environmental Quality	328-2372
ND State Dept of Emergency Mgmt	800-773-3259
Northern Improvement	223-6695

DB Waste Emergency Contact List

David Barth	(701) 319-0777
Lee Fergel	(701) 527-0096
George Schick	(701) 226-1611

3.) Emergency Procedures

Personal Injury: Upon notification of an injury at the facility, the Site Leader and/or the Site Safety Officer will assess the nature of the injury. First aid will be provided with the equipment available from the facility. If the injury is such that more intense care is required the Ambulance Service and Medcenter One/CHI St. Alexius Medical Center will be notified of the medical concern or emergency. Depending on the severity of the injury, the person injured may be transported to the hospital in an ambulance requested from the local ambulance service.

If the injury increases the risk to others, the designated emergency signal of three (3) loud horn blasts shall be sounded and all facility personnel shall move upwind of the facility to await further instructions. Activities on-site will cease until the added risk is removed or minimized.

Fire/Explosion: Upon notification of a fire or explosion onsite, the designated emergency signal of three (3) loud horn blasts shall be sounded and all facility personnel are to assemble upwind. The Burleigh County Rural Fire Department shall be alerted and all personnel shall leave the facility until the situation is evaluated and appropriate actions taken.

Emergency Escape: In the event of an emergency, facility personnel or other site personnel will leave the facility by vehicle (preferred alternative) or by foot (secondary alternative) by the shortest available route. The assembly of personnel at the gate is recommended to account for all personnel on-site. However, all evacuating personnel should move in and upwind direction until off the facility, or to a safe location.

In all situations, when an on-site emergency results in evacuation of the Inert Waste Facility, personnel shall not re-enter until:

1.) The conditions resulting in the emergency have been corrected.
2.) The hazards have been reassessed.
3.) The Site Safety Plan has been reviewed.
4.) Site personnel have been briefed on any changes in the Site Safety Plan.

Site Safety Plan
D.B. Waste, LLC
Bismarck, ND

ALL SITE AND FACILITY PERSONNEL HAVE READ THE ABOVE PLAN AND ARE FAMILIAR WITH ITS PROVISIONS

NAME	SIGNATURE/DATE
Leader:_____	_____
Site Safety Officer:_____	_____
Other Personnel:_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

This plan should be reviewed by all facility personnel at least annually.

Appendix E

Wetland Map

LEGEND

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

N

0 500 1000 2000

SOURCE: National Wetlands Mapper

Carlson McCain
ENVIRONMENTAL • ENGINEERING • SURVEYING

DB WASTE, LLC
INERT WASTE FACILITY
Burleigh County, ND

WETLAND MAP

Appendix F

Well Information

140-081-12 BDC			
Data Source	ND State Water Commission	Well Index	15511
County	Burleigh	Date Drilled	04/30/1993
Aquifer	Undefined	Purpose	Observation Well
Basin	Missouri River	Casing Type	PVC
MP Elevation (ft)	2,043.16	Diameter (in.)	2.0
Surface Elev. (ft)	2,041.11	Screened Interval (ft)	130 - 140
Elevation Source (Datum)	(NVGD29)	Coord (Long,Lat)	-100.84579, 46.96222
Total Depth (ft)	140.00	USGS ID	
Bedrock Depth (ft)	0.00		

Lithologic Log

Interval (ft)	Unit	Description
0 - 2	TOPSOIL	NO DESCRIPTION
2 - 8	TILL	CLAY, SILT, PEBBLES, DARK YELLOWISH BROWN, 10YR4/2.
8 - 12	GRAVEL	NO DESCRIPTION
12 - 14	SILT	SANDY, MODERATE YELLOWISH-BROWN, (BEDROCK).
14 - 17	CLAY	STIFF, PALE YELLOWISH-BROWN, 10YR6/2.
17 - 24	CLAY	SILTY, PALE YELLOWISH-BROWN, 10YR6/2.
24 - 28	CLAY	STIFF, DARK YELLOWISH-ORANGE, 10YR6/6.
28 - 34	CLAY	STIFF, GRAYISH-BROWN, 5YR3/2.
34 - 36	CLAY	STIFF, MEDIUM GRAY, N5.
36 - 38	CLAY	STIFF, GRAYISH-BROWN, 5YR3/2.
38 - 45	CLAY	STIFF, LIGHT OLIVE GRAY, 5Y6/1.
45 - 51	CLAY	TRACE FINE SAND, DARK YELLOWISH-ORANGE TO MEDIUM GRAY.
51 - 58	SAND	CLAYEY, FINE GRAINED, LIGHT OLIVE GRAY, 5Y6/1.
58 - 62	CLAY	STIFF, MEDIUM GRAY, N5.
62 - 71	SAND	CLAYEY, FINE GRAINED, LIGHT OLIVE GRAY, 5Y6/1.
71 - 82	SAND	SILTY, FINE GRAINED, LIGHT OLIVE GRAY, 5Y6/1.
82 - 84	CLAY	SILTY, MEDIUM LIGHT GRAY, N6.
84 - 91	CLAY	SANDY, MEDIUM LIGHT GRAY, N6.
91 - 100	SAND	SILTY,WITH INTERBEDDED CLAY, MODERATE YELLOWISH-BROWN, THIN LIGNITE BED AT 96'.
100 - 110	SAND	SILTY, FINE GRAINED, MODERATE YELLOWISH-BROWN, 10YR5/4.
110 - 130	SAND	SILTY, FINE GRAINED, DUSKY YELLOW, 5Y6/4.
130 - 140	SAND	FINE GRAINED, DARK GRAY, N3.

140-081-12 BDD			
Data Source	ND State Water Commission	Well Index	15510
County	Burleigh	Date Drilled	04/28/1993
Aquifer	No Obs Well Installed	Purpose	Test Hole
Basin	Missouri River	Casing Type	None
MP Elevation (ft)	0.00	Diameter (in.)	0.0
Surface Elev. (ft)	2,037.65	Screened Interval (ft)	0 - 0
Elevation Source (Datum)	Survey 0.01 ft (NVGD29)	Coord (Long,Lat)	-100.84320, 46.96222
Total Depth (ft)	160.00	USGS ID	
Bedrock Depth (ft)	0.00		

Lithologic Log

Interval (ft)	Unit	Description
0 - 1	TOPSOIL	NO DESCRIPTION
1 - 21	CLAY	SANDY, YELLOWISH-BROWN 10YR5/4, TILL.
21 - 24	GRAVEL	MEDIUM TO COARSE GRAINED, YELLOWISH-BROWN, 10YR5/4.
24 - 34	CLAY	BEDROCK, OXIDIZED.
34 - 46	SAND	FINE GRAINED, YELLOWISH-BROWN, 10YR5/4.
46 - 48	CLAY	TRACE OF SAND.
48 - 58	CLAY	SILTY, MODERATELY YELLOWISH-BROWN, 10YR5/4.
58 - 67	SILT	WITH CLAY AND VERY FINE GRAINED SAND, PALE BROWN, 5YR5/2.
67 - 70	CLAY	SILTY, MEDIUM LIGHT GRAY, N6.
70 - 71	SANDSTONE	FINE TO MEDIUM GRAINED, WELL CEMENTED, MED LIGHT GRAY, N6.
71 - 80	SAND	FINE GRAINED, YELLOWISH-BROWN.
80 - 81	SANDSTONE	
81 - 89	SAND	FINE GRAINED, BROWNISH-ORANGE.
89 - 98	SAND	FINE GRAINED, GREENISH-YELLOW.
98 - 100	SILT	TRACE OF CLAY AND SAND, REDDISH-BROWN.
100 - 122	SAND	WITH SILT, FINE GRAINED, GREENISH-YELLOW.
122 - 128	SAND	FINE GRAINED, OLIVE.
128 - 131	CLAY	MEDIUM GRAY.
131 - 137	CLAY	DARK GRAY.
137 - 140	SILT	WITH VERY FINE SAND, MEDIUM GRAY.
140 - 147	CLAY	DARK GRAY.
147 - 160	SAND	SILTY, FINE GRAINED, DARK GRAY.

140-081-12 CAC1			
Data Source	ND State Water Commission	Well Index	15516
County	Burleigh	Date Drilled	04/29/1993
Aquifer	Undefined	Purpose	Observation Well - Plugged
Basin	Missouri River	Casing Type	PVC
MP Elevation (ft)	1,995.00	Diameter (in.)	2.0
Surface Elev. (ft)	1,995.00	Screened Interval (ft)	55 - 60
Elevation Source (Datum)	Topographic Map (NVGD29)	Coord (Long,Lat)	-100.84583, 46.95862
Total Depth (ft)	68.00	USGS ID	
Bedrock Depth (ft)	0.00		

Lithologic Log

Interval (ft)	Unit	Description
0 - 2	TOPSOIL	NO DESCRIPTION
2 - 5	CLAY	SANDY, MODERATE YELLOWISH-BROWN, 10YR5/4.
5 - 9	SAND	SILTY, FINE GRAINED, MODERATE YELLOWISH-BROWN, 10YR5/4.
9 - 10	SANDSTONE	FINE TO MEDIUM GRAINED, WELL CEMENTED, MEDIUM LIGHT GRAY, N6.
10 - 22	SAND	FINE TO MEDIUM GRAINED, MODERATE YELLOWISH-BROWN, 10YR5/4.
22 - 26	CLAY	YELLOWISH GRAY, 5Y 8/1.
26 - 37	CLAY	SILTY, MODERATE YELLOWISH-BROWN, 10YR5/4.
37 - 46	SAND	SILTY, FINE GRAINED, OLIVE GRAY, 5Y4/1.
46 - 60	SAND	FINE GRAINED, OLIVE GRAY, 5Y4/1.
60 - 62	SHALE	MODERATE YELLOWISH-BROWN, 10YR5/4.
62 - 64	SANDSTONE	FINE GRAINED, WELL CEMENTED, MEDIUM DARK GRAY, N4.
64 - 68	SILT	WITH SAND AND CLAY, MEDIUM DARK GRAY, N4.

140-081-12 CAC2			
Data Source	ND State Water Commission	Well Index	15517
County	Burleigh	Date Drilled	05/11/1993
Aquifer	No Obs Well Installed	Purpose	Test Hole
Basin	Missouri River	Casing Type	None
MP Elevation (ft)	0.00	Diameter (in.)	0.0
Surface Elev. (ft)	1,995.58	Screened Interval (ft)	0 - 0
Elevation Source (Datum)	Survey 0.01 ft (NVGD29)	Coord (Long,Lat)	-100.84583, 46.95862
Total Depth (ft)	152.00	USGS ID	
Bedrock Depth (ft)	0.00		

Lithologic Log

Interval (ft)	Unit	Description
0 - 2	TOPSOIL	NO DESCRIPTION
2 - 9	SAND	FINE GRAINED, MODERATE YELLOWISH-BROWN, 10YR5/4.
9 - 10	SANDSTONE	FINE GRAINED, GRAYISH-ORANGE, 10YR7/4.
10 - 22	SAND	FINE GRAINED, MODERATE YELLOWISH-BROWN WITH MANY BLACK GRAINS, 10YR7/4.
22 - 28	CLAY	STIFF, MEDIUM GRAY, N5.
28 - 41	SAND	FINE GRAINED, MODERATE YELLOWISH-BROWN, 10YR5/4.
41 - 61	SAND	FINE GRAINED, LIGHT OLIVE GRAY, 5Y5/2.
61 - 62	CLAY	SILTY, MODERATE YELLOWISH-BROWN TO DARK YELLOWISH-ORANGE.
62 - 85	SAND	FINE GRAINED, LIGHT GRAY, 5Y5/2.
85 - 91	SAND	FINE GRAINED, OLIVE GRAY WITH MANY BLACK (LIGNITE) GRAINS, 5Y4/1.
91 - 96	CLAY	STIFF, MEDIUM DARK GRAY, N4.
96 - 98	CLAY	SILTY, SANDY, MEDIUM GRAY, N5.
98 - 99	SANDSTONE	
99 - 135	CLAY	STIFF TO SILTY, MEDIUM GRAY, N5.
135 - 138	CLAY	SANDY, MEDIUM DARK GRAY, N4.
138 - 142	CLAY	STIFF TO SILTY, MEDIUM DARK GRAY, N4.
142 - 152	CLAY	STIFF, MEDIUM DARK GRAY, N4.

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140-081-12 CBB1			
Data Source	ND State Water Commission	Well Index	15515
County	Burleigh	Date Drilled	04/29/1993
Aquifer	Undefined	Purpose	Observation Well - Plugged
Basin	Missouri River	Casing Type	PVC
MP Elevation (ft)	1,972.71	Diameter (in.)	2.0
Surface Elev. (ft)	1,972.71	Screened Interval (ft)	45 - 50
Elevation Source (Datum)	Survey 0.01 ft (NVGD29)	Coord (Long,Lat)	-100.85104, 46.96042
Total Depth (ft)	50.00	USGS ID	
Bedrock Depth (ft)	0.00		

Lithologic Log

Interval (ft)	Unit	Description
0 - 2	TOPSOIL	NO DESCRIPTION
2 - 10	SILT	SANDY, MODERATE YELLOWISH BROWN, 10YR5/4.
10 - 11	SANDSTONE	FINE GRAINED, LIGHT GRAY, N7.
11 - 13	CLAY	SANDY, MODERATE YELLOWISH-BROWN, 10YR5/4.
13 - 24	SAND	FINE GRAINED, YELLOWISH GRAY, 5Y7/2.
24 - 26	SAND	MODERATE REDDISH-ORANGE, 10YR6/6.
26 - 37	SAND	FINE GRAINED, OLIVE GRAY, 5Y4/1.
37 - 50	SAND	FINE TO MEDIUM GRAINED, OLIVE GRAY, 5Y4/1.

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140-081-12 CBB2			
Data Source	ND State Water Commission	Well Index	15512
County	Burleigh	Date Drilled	04/29/1993
Aquifer	Undefined	Purpose	Observation Well - Plugged
Basin	Missouri River	Casing Type	PVC
MP Elevation (ft)	1,958.00	Diameter (in.)	2.0
Surface Elev. (ft)	1,958.00	Screened Interval (ft)	28 - 33
Elevation Source (Datum)	Topographic Map (NVGD29)	Coord (Long,Lat)	-100.85104, 46.96042
Total Depth (ft)	40.00	USGS ID	
Bedrock Depth (ft)	0.00		

Lithologic Log

Interval (ft)	Unit	Description
0 - 5	TOPSOIL	NO DESCRIPTION
5 - 13	SAND	VERY FINE GRAINED, MODERATE YELLOWISH-BROWN, 10YR5/4.
13 - 20	SANDSTONE	FINE GRAINED, WELL CEMENTED, MODERATE YELLOWISH-BROWN, 10YR5/4.
20 - 33	SAND	FINE GRAINED, OLIVE GRAY, 5Y4/1.
33 - 35	SHALE	MODERATE REDDISH-ORANGE, 10YR6/6.
35 - 40	CLAY	MODERATE YELLOWISH-BROWN, 10YR5/4.

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140-081-12 CBB3			
Data Source	ND State Water Commission	Well Index	15514
County	Burleigh	Date Drilled	05/11/1993
Aquifer	Undefined	Purpose	Observation Well
Basin	Missouri River	Casing Type	PVC
MP Elevation (ft)	1,960.69	Diameter (in.)	2.0
Surface Elev. (ft)	1,958.85	Screened Interval (ft)	58 - 68
Elevation Source (Datum)	Survey 0.01 ft (NVGD29)	Coord (Long,Lat)	-100.85104, 46.96042
Total Depth (ft)	70.00	USGS ID	
Bedrock Depth (ft)	0.00		

Lithologic Log

Interval (ft)	Unit	Description
0 - 2	TOPSOIL	NO DESCRIPTION
2 - 33	SAND	FINE GRAINED, MODERATE YELLOWISH-BROWN, 10YR5/4.
33 - 35	SANDSTONE	FINE GRAINED, PALE YELLOWIH-BROWN, 10YR6/2.
35 - 46	SAND	FINE GRAINED, MODERATE YELLOWISH-BROWN, 10YR5/4.
46 - 60	SAND	FINE GRAINED, MODERATE BROWN, 5YR4/4.
60 - 61	CLAY	MEDIUM GRAY, N5.
61 - 62	SANDSTONE AND LIGNITE	NO DESCRIPTION
62 - 64	CLAY	SILTY, MEDIUM GRAY, N5.
64 - 67	SAND	FINE GRAINED, MEDIUM GRAY, N5.
67 - 70	CLAY	GRAYISH-BROWN, 5YR3/2.

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140-081-12 CCB			
Data Source	ND State Water Commission	Well Index	15513
County	Burleigh	Date Drilled	04/29/1993
Aquifer	Undefined	Purpose	Observation Well
Basin	Missouri River	Casing Type	PVC
MP Elevation (ft)	1,990.91	Diameter (in.)	2.0
Surface Elev. (ft)	1,989.01	Screened Interval (ft)	78 - 88
Elevation Source (Datum)	Survey 0.01 ft (NVGD29)	Coord (Long,Lat)	-100.85107, 46.95683
Total Depth (ft)	91.00	USGS ID	
Bedrock Depth (ft)	0.00		

Lithologic Log

Interval (ft)	Unit	Description
0 - 2	TOPSOIL	NO DESCRIPTION
2 - 6	SILT	SANDY, LIGHT GREENISH-GRAY, 5GY8/1.
6 - 7	SANDSTONE	FINE GRAINED, WELL CEMENTED, MODERATE REDDISH-ORANGE, 10YR6/6.
7 - 13	SANDSTONE	FINE GRAINED, MODERATELY CEMENTED, MODERATE YELLOWISH-BROWN, 10YR5/4.
13 - 21	SAND	FINE GRAINED, LIGHT OLIVE GRAY, 5Y6/1.
21 - 44	SAND	FINE GRAINED, OLIVE GRAY 5Y, 4/1.
44 - 53	SAND	SILTY, FINE GRAINED, OLIVE GRAY, 5Y4/1.
53 - 57	SANDSTONE	FINE GRAINED, WELL CEMENTED, MEDIUM DARK GRAY, N4.
57 - 69	SAND	SILTY, FINE GRAINED, MODERATE YELLOWISH-BROWN, 10YR5/4.
69 - 71	SAND	FINE GRAINED, LIGHT OLIVE GRAY, 5Y6/1.
71 - 73	CLAY	SILTY, MODERATE YELLOWISH-BROWN, 10YR5/4.
73 - 78	CLAY	SILTY, GREENISH-GRAY, 5G6/1.
78 - 81	CLAY	SANDY, MEDIUM DARK GRAY, N4.
81 - 84	CLAY	MEDIUM DARK GRAY, N4.
84 - 89	SAND	VERY FINE GRAINED, MEDIUM DARK GRAY, N4.
89 - 91	CLAY	MEDIUM DARK GRAY, N4.

Engineering Report

D.B. Waste, LLC
Burleigh County, North Dakota
Project #4375

Prepared for:

D.B. Waste, LLC
Mr. Dave Barth
311 South 7th Street
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December 20, 2020

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ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

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Engineering Report
DB Waste, LLC

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that properly qualified personnel properly gather and evaluate the information submitted based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information. The information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Todd A. Hartleben, P.E.

12/20/20
Date

License No. PE-5659

1.0 INTRODUCTION

This Engineering Report is being submitted to support an application for a major modification of North Dakota Department of Environmental Quality (NDDEQ) permit number IT-163 for the D.B. Waste Inert Waste Facility (Facility), as required under North Dakota Administrative Code (NDAC) Chapter 33.1-20-05.1. The proposed modification described herein includes revising the base and final grades, modifying the perimeter berms, and revising stormwater management.

The Facility is located approximately eight (8) miles north of the City of Bismarck, North Dakota, and two and one-half (2½) miles west of United States Highway 83. The facility is situated on parcels of property comprising approximately 396 acres. Approximately 297 acres of this property is currently approved for operation as a sanitary landfill by a special use permit issued by Burleigh County (Ordinance 83-01, adopted January 5, 1983). The extents of the current facility are located in the S½-S½-NW¼, and the N½-SW¼ of Section 12, Township 140 North, Range 81 West, Burleigh County, North Dakota.

Other documents that are part of this Modification of the Permit Application package include:

- Application Form and Attachments
- Permit Application Drawings
- Engineering Report
- Plan of Operation and Closure

Other pertinent documents are unchanged by the proposed modification, and are thus not re-submitted in the application, include:

- Site Characterization Report
- Environmental Monitoring Work Plan

Section 2 of this report describes the proposed modification to the Facility. Section 3 describes the phased development plan for the Facility. Section 4 presents analyses for the engineered systems.

2.0 PROJECT SITE DESCRIPTION

2.1 Project Location

The existing Facility is located approximately eight (8) miles north of the City of Bismarck, North Dakota, and two and one-half (2½) miles west of United States Highway 83. The facility is situated on parcels of property comprising approximately 396 acres. Approximately 297 acres of this property is currently approved for operation as a sanitary landfill by a special use permit issued by Burleigh County (Ordinance 83-01, adopted January 5, 1983). The extents of the current facility are located in the S½-S½-NW¼, and the N½-SW¼ of Section 12, Township 140 North, Range 81 West, Burleigh County, North Dakota.

2.2 General Site Information

Current disposal activity is currently occurring in the active cell area as depicted on the enclosed figures. An additional future cell (67.8 acres, 4.5 million cubic yards (CY)) was permitted in the North ½ of the Southeast ¼ and the South ½ of the Northeast ¼ of Section 11, in 2015.

The proposed expansion would modify the additional future cell (67.8 acres, 4.5 million CY), to consist of nine disposal cells (53.64-acres, 6.5 million CY) in the North ½ of the Southeast ¼ and the South ½ of the Northeast ¼ of Section 11. The proposed base grades and final cover elevations are depicted on the enclosed figures.

Existing topsoil and suitable plant growth material (SPGM) would be stripped from this area prior to disposal of inert materials.

Closure of current and future disposal areas will follow orderly development of expansion areas. Closure will be performed in accordance with applicable regulations and will be certified by a registered engineer. The NDDEQ will be notified prior to initiating closure procedures.

Total disposal capacity of the proposed expansion(s) is approximately 6.5 million cubic yards. The overall life of the facility is estimated at 93 years based on current disposal volumes. Increases or decreases in disposal volumes and soil handling practices will affect the timing of the overall expansion and life of the facility.

3.0 FACILITY DEVELOPMENT PLAN

The Facility expansion will include 9 additional cells (Cells 1 through 9) bounded by a perimeter berm, perimeter ditching to capture stormwater runoff, designated stockpiling areas for suitable plant growth material (SPGM), and ramps and access roads. Final cover will be constructed on the finished slopes of a preceding cell as expeditiously as possible following construction of a subsequent new cell. The overall Facility layout and cell configuration is shown on Sheet 3 of the Permit Drawings. A detailed development sequence schedule is provided in Table 1, showing cell acreage and disposal capacity for each phase, final cover areas, and a rolling total of open landfill area. The development sequence is also shown on Sheet 3 of the Permit Drawings.

Site development, as each cell is constructed, will include establishing erosion controls in accordance with the Storm Water Pollution Prevention Plan (SWPPP), stripping and stockpiling SPGM and subsoil, and constructing the perimeter berm. Soil obtained from excavation will be used for construction of the perimeter berms, drainage control berms and ditches, and intermediate and final cover.

The final cover grading plan is shown on Sheet 4 (Final Cover Grading Plan) of the Permit Drawings. The proposed storm water management plan for the Facility is shown on Sheet 5 of the Permit Drawings. The final cover and associated storm water controls will be constructed in phases along with cell progression. Details of the stormwater control system are shown on Sheet 9 of the Permit Drawings. It is expected that the largest open area throughout the life of the expansion will not exceed 19.91 acres. Cumulative open areas for the life of the Facility are tabulated in Table 1.

Soil balance calculations for the proposed expansion indicate that 212,000 cubic yards of topsoil and 2,500,000 cubic yards of other soils, of which 334,000 CY consists of subsoil, will be produced from site excavation for the landfill. 712,000 cubic yards of fill will be required for construction of the landfill perimeter berm and site access roads. Final cover construction will require 375,250 cubic yards of clay-rich soils and 46,900 cubic yards of SPGM. Given an expected 10 to 15 percent consolidation of volume from bulk excavation to compacted fill, there is an approximate excess of 1,387,000 cubic yards of fill for the Facility. Excess soils will be utilized for intermediate cover needs, which is expected to be at least 1,300,000 CY of soil. Other soils will be required for use on the existing portion of the landfill. Excess soils will be stockpiled in the locations shown on Sheet 2 of the Permit Drawings.

TABLE 1
FACILITY DEVELOPMENT SUMMARY
Engineering Report
DB Waste Inert Waste Facility

Phase	Cell Volume (cy)	Cumulative Volume (cy)	Liner Area (ac.)	Cum. Liner Area (ac.)	Final Cover Area (ac.)	Cum. Final Cover Area (ac.)	Open Area (ac.)
Cell 1	274,437	274,437	5.83	5.83	0	0	5.83
Cell 2	524,061	798,498	6.25	12.08	2.13	2.13	9.95
Cell 3	344,749	1,143,247	5.52	17.60	3.28	5.41	12.19
Cell 4	864,011	2,007,258	5.79	23.39	3.21	8.62	14.77
Cell 5	596,951	2,604,209	6.41	29.80	6.22	14.84	14.96
Cell 6	1,247,826	3,852,035	6.35	36.15	4.18	19.02	17.13
Cell 7	447,427	4,299,462	5.24	41.39	9.10	28.12	13.27
Cell 8	370,354	4,669,816	6.08	47.47	3.25	31.37	16.10
Cell 9	1,818,803	6,488,619	6.17	53.64	3.75	35.12	18.52
Final	NA	6,488,619	NA	53.64	18.52	53.64	0.00

Based upon SPGM and subsoil depths determined by the high-intensity soil survey for the site, there is approximately 212,500 cubic yards of SPGM. Final cover construction will require 47,000 CY of SPGM and 18,750 CY of SPGM will be required for disturbed areas outside of the final cover footprint, for a total of 65,750 CY of SPGM required for the life of the landfill.

Based upon the maximum open landfill area and overall site earthwork balance, the SPGM stockpile quantity is calculated to be 167,800 CY. Stockpile locations are designated as shown on Sheet 2 of the Permit Drawings. The SPGM stockpile has a capacity of 170,000 cubic yards, providing sufficient excess capacity to properly manage all SPGM produced from the site. There will be enough SPGM stockpiled at any given time to ensure that the current open area of the landfill can be properly covered. Subsoil be treated and stockpiled as random fill, as the final cover design does not require a separation between the two materials.

4.0 FACILITY DESIGN

An overview of the Facility design is provided below. Information regarding specific design details is provided in the Permit Drawings.

4.1 Facility Foundation

The Facility foundation will consist of undisturbed native soil. The results of the high-intensity soil survey and site characterization investigation show that soils at the site are predominantly silt and clay loam resulting from weathering of glacial till. The soils are listed as well-drained with slopes ranging from 0 to 15 percent. Clay till is the predominant material within the foundation footprint and is present to depths in excess of 80 feet below existing ground surface. The clay becomes sandier with depth.

To prepare the subgrade for construction of the landfill liner, SPGM will be stripped and stockpiled, then subsoil and native soils will be excavated to the design subgrade. Soil obtained from excavation will be placed and compacted for construction of perimeter berms, drainage berms/ditches, site roads, etc. Material not used immediately will be stockpiled for future use. Stockpiles will be graded to drain and surrounded by silt fence and other erosion control devices as necessary to prevent release of sediment from the Site.

Foundation preparation will be subjected to construction quality assurance testing as required by NDDEQ Guideline 5.

4.2 Final Cover System

The final cover will be constructed on 15 percent (6.67H:1V) slopes on the sides of the Facility. Final cover grades are shown on Sheet 4 of the Permit Drawings. A buffer soil layer may be placed over the waste if required to smooth the finished waste grades prior to final cover construction.

The final cover design being proposed, consists of 4 feet of clay-rich soils overlain by 6 inches of SPGM, providing a total final cover thickness of 4.5 feet. The top layer will be vegetated with native grass. A HELP model was not performed, as the proposed design conforms with the requirements of NDAC 33.1-20-05.1-04.

Side slope berms for stormwater interception will be constructed to drain to the locations on the final cover slope shown on Sheet 5 of the Permit Drawings, as further discussed in Section 5.6. The berms will be constructed with 15 percent (6.67H:1V) slopes to create a 3-foot deep ditch. Erosion calculations for these slopes indicate a maximum erosion potential of 1.0 tons/acre/year, meeting the requirements of NDAC 33.1-20-4.1-09.4.b.3. The RUSLE2 calculation reports for Grassna Silt Loam, Sen Silt Loam, Golva Silt Loam, and Arnegard Loam are included as Appendix A.

The slope of the flow line of the side slope ditches is a minimum of 1 percent. Although less than the minimum 3 percent slope specified in NDAC 33.1-20-04.1-09.4.b.3, the flatter ditch flow line grades

are proposed to minimize the erosion potential from concentrated ditch flow, and are consistent with side slope ditch grades approved by NDDEQ at other facilities.

4.3 Storm Water Control System

A storm water control system will be constructed to manage storm water runoff from the final cover, control erosion, and provide for sediment removal from the runoff prior to discharge from the site. The storm water control system consists of collection ditches/berm constructed on benches on the Facility side slopes, catch basins, conveyance piping, and a detention pond.

The storm water management system is designed to collect and convey runoff from the final cover and site perimeter areas to sedimentation basin located immediately east of the leachate pond. The system is designed to accommodate runoff from the 25-year, 24-hour rainfall with adequate freeboard on inlets and berms, and also accommodate runoff from the 100-year, 24-hour rainfall without overtopping any structures. The layout of these components is shown on Sheets 4 and 5 of the Drawings. Details of the storm water control structures are shown on Sheets 8 through 10 of the Drawings.

Runoff from the landfill will be directed via pipes and swales to one of two sedimentation ponds. The ponds will outlet through a 12-inch pipe to drainageways abutting each pond respectively.

The performance of the stormwater control system was evaluated using HydroCAD (Version 9.00, HydroCAD Software Solutions, LLC, 2009). Three scenarios were evaluated:

1) 25-year, 24-hour storm event with the detention pond starting in a dry condition
2) 25-year, 24-hour storm event with the detention pond starting in a wet condition
3) 100-year, 24-hour storm event with the detention pond starting in a wet condition

The pond outlet elevations are designed so that the ponds can accommodate the entire runoff volume from the 25-year, 24-hour storm event with zero discharge when starting in a dry condition. The pond outlet elevations are set at the 25-year, 24-hour ponding elevation.

When the design event occurs and Pond 1 (NW pond) is full to the outlet elevation, Pond 1 bounces 1.65 feet, maintains 2.3 feet of freeboard, discharges at a peak rate of 3.3 cubic feet per second, and provides a center-of-mass detention time of 7.32 hours for sediment removal. When the design event occurs and Pond 2 (SE pond) is full to the outlet elevation, Pond 2 bounces 3.09 feet, maintains 2.9 feet of freeboard, discharges at a peak rate of 6.1 cubic feet per second, and provides a center-of-mass detention time of 5.9 hours for sediment removal.

For the 100-year, 24-hour event with the same starting conditions as described above, Pond 1 bounces 2.8 feet, maintains 1.2 feet of freeboard, discharges at a peak rate of 5.0 cubic feet per second, and provides a center-of-mass detention time of 8.3 hours for sediment removal. Pond 2 bounces 5.2 feet, maintains 0.8 feet of freeboard, discharges at a peak rate of 8.2 cubic feet per second, and provides a center-of-mass detention time of 7.5 hours for sediment removal.

Detailed analyses of the three scenarios described above are provided in the HydroCAD report provided as Appendix B.

4.4 Erosion Control

An NPDES Stormwater Permit is in force, and construction activities will be performed in accordance with the requirements of the Storm Water Pollution Prevention Plan (SWPPP). In addition, a number of design features are incorporated that will minimize the erosion potential for the site.

Finished slopes for both the final cover and the exterior perimeter berms are designed at 15 percent. Side slope berms/ditches on the final cover and the inside slope of the perimeter ditches are also designed at 15 percent. These slopes will serve to minimize the erosion potential for the site. An analysis of the erosion potential for the side slope ditches on the final cover using RUSLE2 is included as Appendix A.

Ditch flow line slopes on the final cover limit the flow velocity in the ditches from the 100-year, 24-hour event to approximately 3.0 feet per second, which is a non-erosive velocity. Ditch flow line slopes on the perimeter ditches (located on the exterior slopes of the perimeter berm) range from 0.5 to 4.0 percent with flow velocities for the 100-year, 24-hour event of 2.3 to 7.2 feet per second. Rock check dams will be placed at 200-foot intervals along the ditches to trap sediment and reduce flow velocity. The perimeter ditches will also be lined with three-dimensional permanent erosion mats.

Stormwater will be conveyed from the final cover to the perimeter ditches via buried drop pipes rather than in surface channels. Use of drop pipes eliminates the potential for erosion from concentrated flow in channels on the final cover slopes. Each drop pipe run will be terminated in an energy dissipation manhole and discharged to the perimeter ditches through 30-inch diameter corrugated metal pipes. Discharge rates for the 100-year, 24-hour event range from 6.6 to 25.2 cubic feet per second with discharge velocities ranging from 2.4 to 5.1 feet per second. Erosion protection at the outlets will be provided with either riprap.

Runoff from the perimeter ditches will be routed to either Pond 1 or 2. Riprap-lined plunge pools will be constructed at each pond inlet to prevent erosion within the ponds. Pond outlets consist of 12-inch diameter corrugated metal culverts from the routed through energy dissipation manholes which outlets to a 24-inch diameter corrugated metal pipe with a maximum discharge velocity of 3.6 feet per second for the 100-year, 24-hour event. Riprap blankets will be constructed at pond outlets for further energy dissipation and erosion control.

APPENDIX A

RUSLE2 Worksheet Erosion Calculation Record

Info:

Tract #: 1
Owner name: DB Waste
Field name: Disposal Facility

Location: North Dakota\Burleigh County
Soil: C451A Arnegard loam, 0 to 2 percent slopes\Arnegard loam 84%
Slope length (horiz): 440 ft
Avg. slope steepness: 15 %
T value: 5.0 t/ac/yr

Alternatives:

Management	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*	*Cons. plan. soil loss, t/ac/yr*	*Description*
Cool season grass; not harvested moderate stand	a. rows up-and-down hill	(none)	(none)	0.45	Potential Erosion – Final Cover

Soil: E2213A Golva Silt Loam, 0 to 2 percent slopes\Golva Silt loam 75%
Slope length (horiz): 440 ft
Avg. slope steepness: 15 %
T value: 5.0 t/ac/yr

Alternatives:

Management	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*	*Cons. plan. soil loss, t/ac/yr*	*Description*
Cool season grass; not harvested moderate stand	a. rows up-and-down hill	(none)	(none)	1.0	Potential Erosion – Final Cover

RUSLE2 Worksheet Erosion Calculation Record

Info:

Tract #: 1
Owner name: DB Waste
Field name: Disposal Facility

Location: North Dakota\Burleigh County
Soil: C457A Grassna silt loam, 0 to 2 percent slopes\Grassna Silt loam 88%
Slope length (horiz): 440 ft
Avg. slope steepness: 15 %
T value: 5.0 t/ac/yr

Alternatives:

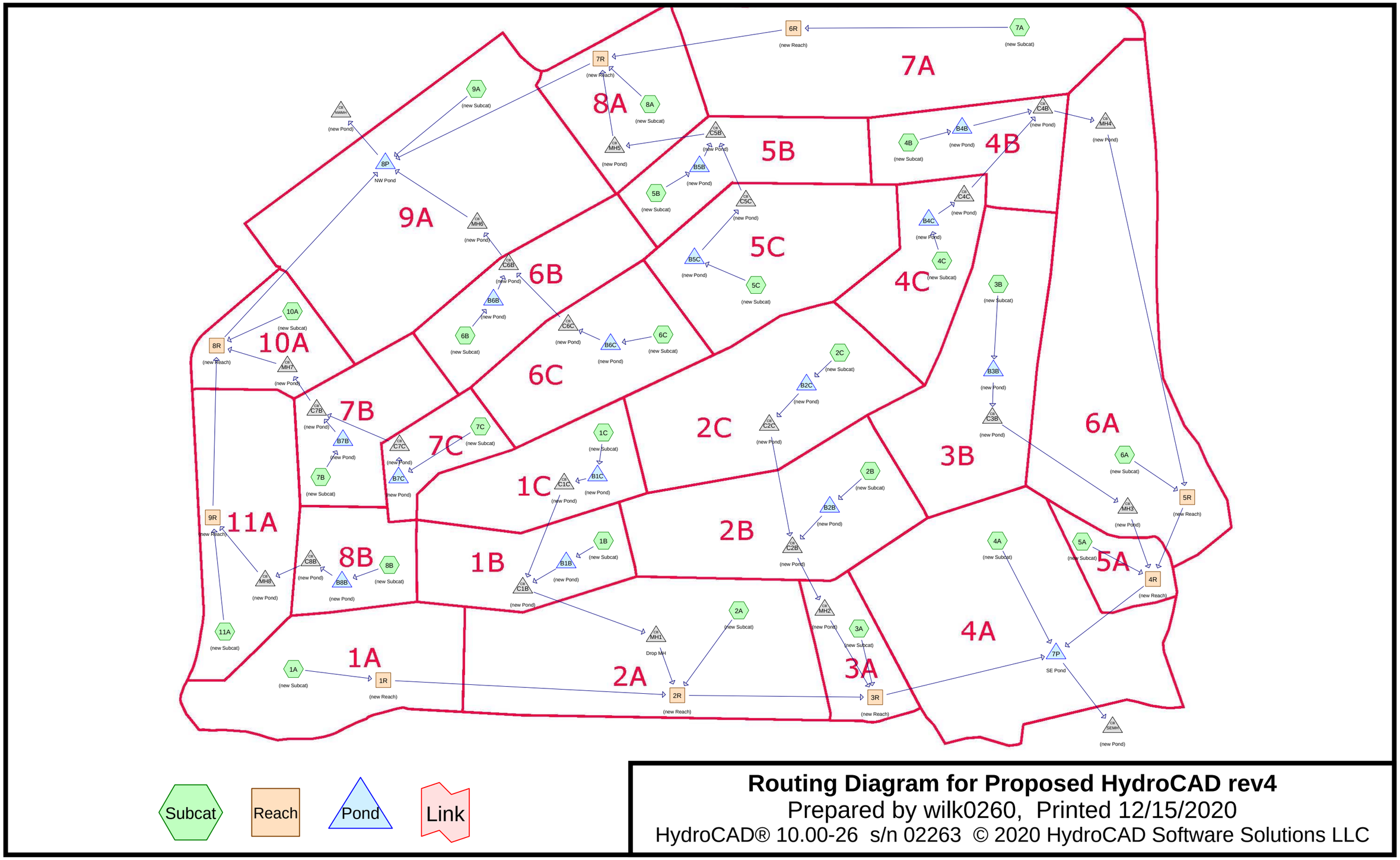
Management	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*	*Cons. plan. soil loss, t/ac/yr*	*Description*
Cool season grass; not harvested moderate stand	a. rows up-and-down hill	(none)	(none)	0.82	Potential Erosion – Final Cover

Soil: C972B Sen Silt Loam, 3 to 6 percent slopes\Sen silt loam 72%
Slope length (horiz): 440 ft
Avg. slope steepness: 15 %
T value: 3.0 t/ac/yr

Alternatives:

Management	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*	*Cons. plan. soil loss, t/ac/yr*	*Description*
Cool season grass; not harvested moderate stand	a. rows up-and-down hill	(none)	(none)	0.89	Potential Erosion – Final Cover

APPENDIX B



Routing Diagram for Proposed HydroCAD rev4

Prepared by wilk0260, Printed 12/15/2020

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
97.739	74	>75% Grass cover, Good, HSG C (1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, 4A, 4B, 4C, 5A, 5B, 5C, 6A, 6B, 6C, 7A, 7B, 7C, 8A, 8B, 9A, 10A, 11A)
97.739	**74**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
97.739	HSG C	1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, 4A, 4B, 4C, 5A, 5B, 5C, 6A, 6B, 6C, 7A, 7B, 7C, 8A, 8B, 9A, 10A, 11A
0.000	HSG D	
0.000	Other	
97.739		**TOTAL AREA**

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	C1B	2,011.61	2,002.00	104.0	0.0924	0.010	21.2	0.0	0.0
2	C1C	2,035.50	2,011.61	205.0	0.1165	0.010	15.9	0.0	0.0
3	C2B	1,994.85	1,976.00	177.0	0.1065	0.010	21.2	0.0	0.0
4	C2C	2,035.50	1,994.85	317.0	0.1282	0.010	15.9	0.0	0.0
5	C3B	1,995.50	1,982.00	150.0	0.0900	0.010	21.1	0.0	0.0
6	C4B	2,015.07	2,006.00	164.0	0.0553	0.010	21.2	0.0	0.0
7	C4C	2,035.50	2,015.07	479.0	0.0427	0.010	21.2	0.0	0.0
8	C5B	2,015.95	2,008.00	105.0	0.0757	0.010	21.2	0.0	0.0
9	C5C	2,035.50	2,015.95	184.0	0.1062	0.010	15.9	0.0	0.0
10	C6B	2,012.07	2,004.00	102.0	0.0791	0.010	21.2	0.0	0.0
11	C6C	2,035.50	2,012.07	202.0	0.1160	0.010	15.9	0.0	0.0
12	C7B	2,008.27	2,000.00	115.0	0.0719	0.010	21.2	0.0	0.0
13	C7C	2,035.50	2,008.27	253.0	0.1076	0.010	15.9	0.0	0.0
14	C8B	2,008.34	2,000.00	146.0	0.0571	0.010	15.9	0.0	0.0
15	MH1	1,986.00	1,986.00	161.0	0.0000	0.025	30.0	0.0	0.0
16	MH2	1,952.00	1,952.00	188.0	0.0000	0.025	30.0	0.0	0.0
17	MH3	1,954.00	1,954.00	218.0	0.0000	0.025	30.0	0.0	0.0
18	MH4	1,996.10	1,996.10	102.0	0.0000	0.025	30.0	0.0	0.0
19	MH5	1,982.00	1,982.00	207.0	0.0000	0.025	30.0	0.0	0.0
20	MH6	1,974.00	1,974.00	223.0	0.0000	0.025	30.0	0.0	0.0
21	MH7	1,978.00	1,978.00	168.0	0.0000	0.025	30.0	0.0	0.0
22	MH8	1,986.00	1,986.00	113.0	0.0000	0.025	30.0	0.0	0.0
23	NWMH	1,970.00	1,968.00	24.0	0.0833	0.025	18.0	0.0	0.0
24	SEMH	1,924.00	1,924.00	71.0	0.0000	0.025	24.0	0.0	0.0

Time span=3.00-35.00 hrs, dt=0.04 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1A: (new Subcat) Runoff Area=178,847 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=261' Slope=0.1500 '/' Tc=11.7 min CN=74 Runoff=8.85 cfs 0.524 af

Subcatchment1B: (new Subcat) Runoff Area=111,895 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=187' Slope=0.1500 '/' Tc=9.0 min CN=74 Runoff=6.27 cfs 0.328 af

Subcatchment1C: (new Subcat) Runoff Area=114,791 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=229' Tc=6.0 min CN=74 Runoff=7.52 cfs 0.336 af

Subcatchment2A: (new Subcat) Runoff Area=297,718 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=13.90 cfs 0.872 af

Subcatchment2B: (new Subcat) Runoff Area=200,643 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=260' Slope=0.1500 '/' Tc=11.7 min CN=74 Runoff=9.92 cfs 0.588 af

Subcatchment2C: (new Subcat) Runoff Area=211,164 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=296' Tc=11.1 min CN=74 Runoff=10.66 cfs 0.618 af

Subcatchment3A: (new Subcat) Runoff Area=67,565 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=3.15 cfs 0.198 af

Subcatchment3B: (new Subcat) Runoff Area=206,873 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=292' Slope=0.1500 '/' Tc=12.8 min CN=74 Runoff=9.84 cfs 0.606 af

Subcatchment4A: (new Subcat) Runoff Area=339,762 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=15.86 cfs 0.995 af

Subcatchment4B: (new Subcat) Runoff Area=109,746 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=153' Slope=0.1500 '/' Tc=7.6 min CN=74 Runoff=6.46 cfs 0.321 af

Subcatchment4C: (new Subcat) Runoff Area=109,094 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=268' Tc=9.2 min CN=74 Runoff=6.06 cfs 0.319 af

Subcatchment5A: (new Subcat) Runoff Area=46,695 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=2.18 cfs 0.137 af

Subcatchment5B: (new Subcat) Runoff Area=113,626 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=149' Slope=0.1500 '/' Tc=7.5 min CN=74 Runoff=6.74 cfs 0.333 af

Subcatchment5C: (new Subcat) Runoff Area=185,512 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=296' Tc=11.1 min CN=74 Runoff=9.36 cfs 0.543 af

Subcatchment6A: (new Subcat) Runoff Area=385,422 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=17.99 cfs 1.129 af

Subcatchment6B: (new Subcat) Runoff Area=124,047 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=156' Slope=0.1500 '/' Tc=7.8 min CN=74 Runoff=7.25 cfs 0.363 af

Subcatchment 6C: (new Subcat) Runoff Area=143,402 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=280' Tc=9.7 min CN=74 Runoff=7.76 cfs 0.420 af

Subcatchment 7A: (new Subcat) Runoff Area=309,322 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=262' Slope=0.1500 '/' Tc=11.8 min CN=74 Runoff=15.26 cfs 0.906 af

Subcatchment 7B: (new Subcat) Runoff Area=108,115 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=199' Slope=0.1500 '/' Tc=9.4 min CN=74 Runoff=5.92 cfs 0.317 af

Subcatchment 7C: (new Subcat) Runoff Area=55,104 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=170' Slope=0.1500 '/' Tc=8.3 min CN=74 Runoff=3.16 cfs 0.161 af

Subcatchment 8A: (new Subcat) Runoff Area=118,254 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=5.52 cfs 0.346 af

Subcatchment 8B: (new Subcat) Runoff Area=79,083 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=199' Slope=0.1500 '/' Tc=9.4 min CN=74 Runoff=4.33 cfs 0.232 af

Subcatchment 9A: (new Subcat) Runoff Area=385,759 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=18.01 cfs 1.130 af

Subcatchment 10A: (new Subcat) Runoff Area=83,070 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=296' Slope=0.1500 '/' Tc=13.0 min CN=74 Runoff=3.90 cfs 0.243 af

Subcatchment 11A: (new Subcat) Runoff Area=172,006 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=245' Slope=0.1500 '/' Tc=11.1 min CN=74 Runoff=8.68 cfs 0.504 af

Reach 1R: (new Reach) Avg. Flow Depth=0.52' Max Vel=1.91 fps Inflow=8.85 cfs 0.524 af
n=0.030 L=657.0' S=0.0053 '/' Capacity=300.24 cfs Outflow=7.49 cfs 0.524 af

Reach 2R: (new Reach) Avg. Flow Depth=0.68' Max Vel=5.40 fps Inflow=31.87 cfs 2.059 af
n=0.030 L=946.0' S=0.0317 '/' Capacity=732.53 cfs Outflow=30.61 cfs 2.059 af

Reach 3R: (new Reach) Avg. Flow Depth=0.87' Max Vel=6.31 fps Inflow=50.45 cfs 3.463 af
n=0.030 L=181.0' S=0.0331 '/' Capacity=748.94 cfs Outflow=50.42 cfs 3.463 af

Reach 4R: (new Reach) Avg. Flow Depth=0.69' Max Vel=6.10 fps Inflow=35.24 cfs 2.512 af
n=0.030 L=202.0' S=0.0396 '/' Capacity=818.62 cfs Outflow=35.24 cfs 2.512 af

Reach 5R: (new Reach) Avg. Flow Depth=0.61' Max Vel=5.19 fps Inflow=27.51 cfs 1.769 af
n=0.030 L=1,281.0' S=0.0329 '/' Capacity=745.73 cfs Outflow=25.31 cfs 1.769 af

Reach 6R: (new Reach) Avg. Flow Depth=0.55' Max Vel=2.91 fps Inflow=15.26 cfs 0.906 af
n=0.030 L=1,221.0' S=0.0115 '/' Capacity=442.04 cfs Outflow=12.32 cfs 0.906 af

Reach 7R: (new Reach) Avg. Flow Depth=0.74' Max Vel=4.49 fps Inflow=28.63 cfs 2.128 af
n=0.030 L=300.0' S=0.0200 '/' Capacity=581.74 cfs Outflow=28.50 cfs 2.128 af

Reach 8R: (new Reach) Avg. Flow Depth=0.79' Max Vel=3.29 fps Inflow=22.96 cfs 1.456 af
n=0.030 L=200.0' S=0.0100 '/' Capacity=411.35 cfs Outflow=22.75 cfs 1.456 af

Reach 9R: (new Reach) Avg. Flow Depth=0.55' Max Vel=2.69 fps Inflow=12.90 cfs 0.735 af
n=0.030 L=750.0' S=0.0100 '/' Capacity=411.35 cfs Outflow=11.33 cfs 0.735 af

Pond 7P: SE Pond Peak Elev=1,939.11' Storage=218,224 cf Inflow=100.86 cfs 6.970 af
Outflow=2.94 cfs 3.023 af

Pond 8P: NW Pond Peak Elev=1,968.31' Storage=239,447 cf Inflow=80.35 cfs 5.497 af
Outflow=0.00 cfs 0.000 af

Pond B1B: (new Pond) Peak Elev=2,016.57' Storage=243 cf Inflow=6.27 cfs 0.328 af
Outflow=6.10 cfs 0.328 af

Pond B1C: (new Pond) Peak Elev=2,040.80' Storage=692 cf Inflow=7.52 cfs 0.336 af
Outflow=5.94 cfs 0.336 af

Pond B2B: (new Pond) Peak Elev=2,000.04' Storage=102 cf Inflow=9.92 cfs 0.588 af
Outflow=9.86 cfs 0.588 af

Pond B2C: (new Pond) Peak Elev=2,041.29' Storage=2,228 cf Inflow=10.66 cfs 0.618 af
Outflow=7.55 cfs 0.618 af

Pond B3B: (new Pond) Peak Elev=2,001.45' Storage=1,368 cf Inflow=9.84 cfs 0.606 af
Outflow=8.00 cfs 0.606 af

Pond B4B: (new Pond) Peak Elev=2,020.05' Storage=66 cf Inflow=6.46 cfs 0.321 af
Outflow=6.46 cfs 0.321 af

Pond B4C: (new Pond) Peak Elev=2,041.12' Storage=1,471 cf Inflow=6.06 cfs 0.319 af
Outflow=4.50 cfs 0.319 af

Pond B5B: (new Pond) Peak Elev=2,020.94' Storage=247 cf Inflow=6.74 cfs 0.333 af
Outflow=6.71 cfs 0.333 af

Pond B5C: (new Pond) Peak Elev=2,041.14' Storage=1,614 cf Inflow=9.36 cfs 0.543 af
Outflow=7.09 cfs 0.543 af

Pond B6B: (new Pond) Peak Elev=2,017.08' Storage=190 cf Inflow=7.25 cfs 0.363 af
Outflow=7.25 cfs 0.363 af

Pond B6C: (new Pond) Peak Elev=2,040.89' Storage=908 cf Inflow=7.76 cfs 0.420 af
Outflow=6.28 cfs 0.420 af

Pond B7B: (new Pond) Peak Elev=2,013.22' Storage=111 cf Inflow=5.92 cfs 0.317 af
Outflow=5.89 cfs 0.317 af

Pond B7C: (new Pond) Peak Elev=2,040.37' Storage=123 cf Inflow=3.16 cfs 0.161 af
Outflow=3.12 cfs 0.161 af

Pond B8B: (new Pond) Peak Elev=2,013.30' Storage=108 cf Inflow=4.33 cfs 0.232 af
Outflow=4.25 cfs 0.232 af

Pond C1B: (new Pond) Peak Elev=2,013.54' Inflow=12.09 cfs 0.664 af
21.2" Round Culvert n=0.010 L=104.0' S=0.0924 '/' Outflow=12.09 cfs 0.664 af

Pond C1C: (new Pond) Peak Elev=2,036.96' Inflow=5.94 cfs 0.336 af
15.9" Round Culvert n=0.010 L=205.0' S=0.1165 '/' Outflow=5.94 cfs 0.336 af

Pond C2B: (new Pond) Peak Elev=1,997.80' Inflow=16.97 cfs 1.206 af
21.2" Round Culvert n=0.010 L=177.0' S=0.1065 '/' Outflow=16.97 cfs 1.206 af

Pond C2C: (new Pond) Peak Elev=2,037.46' Inflow=7.55 cfs 0.618 af
15.9" Round Culvert n=0.010 L=317.0' S=0.1282 '/' Outflow=7.55 cfs 0.618 af

Pond C3B: (new Pond) Peak Elev=1,996.86' Inflow=8.00 cfs 0.606 af
21.1" Round Culvert n=0.010 L=150.0' S=0.0900 '/' Outflow=8.00 cfs 0.606 af

Pond C4B: (new Pond) Peak Elev=2,016.67' Inflow=10.09 cfs 0.641 af
21.2" Round Culvert n=0.010 L=164.0' S=0.0553 '/' Outflow=10.09 cfs 0.641 af

Pond C4C: (new Pond) Peak Elev=2,036.46' Inflow=4.50 cfs 0.319 af
21.2" Round Culvert n=0.010 L=479.0' S=0.0427 '/' Outflow=4.50 cfs 0.319 af

Pond C5B: (new Pond) Peak Elev=2,017.98' Inflow=12.66 cfs 0.876 af
21.2" Round Culvert n=0.010 L=105.0' S=0.0757 '/' Outflow=12.66 cfs 0.876 af

Pond C5C: (new Pond) Peak Elev=2,037.30' Inflow=7.09 cfs 0.543 af
15.9" Round Culvert n=0.010 L=184.0' S=0.1062 '/' Outflow=7.09 cfs 0.543 af

Pond C6B: (new Pond) Peak Elev=2,014.15' Inflow=12.93 cfs 0.783 af
21.2" Round Culvert n=0.010 L=102.0' S=0.0791 '/' Outflow=12.93 cfs 0.783 af

Pond C6C: (new Pond) Peak Elev=2,037.06' Inflow=6.28 cfs 0.420 af
15.9" Round Culvert n=0.010 L=202.0' S=0.1160 '/' Outflow=6.28 cfs 0.420 af

Pond C7B: (new Pond) Peak Elev=2,009.74' Inflow=9.00 cfs 0.478 af
21.2" Round Culvert n=0.010 L=115.0' S=0.0719 '/' Outflow=9.00 cfs 0.478 af

Pond C7C: (new Pond) Peak Elev=2,036.38' Inflow=3.12 cfs 0.161 af
15.9" Round Culvert n=0.010 L=253.0' S=0.1076 '/' Outflow=3.12 cfs 0.161 af

Pond C8B: (new Pond) Peak Elev=2,009.42' Inflow=4.25 cfs 0.232 af
15.9" Round Culvert n=0.010 L=146.0' S=0.0571 '/' Outflow=4.25 cfs 0.232 af

Pond MH1: Drop MH Peak Elev=1,988.76' Inflow=12.09 cfs 0.664 af
30.0" Round Culvert n=0.025 L=161.0' S=0.0000 '/' Outflow=12.09 cfs 0.664 af

Pond MH2: (new Pond) Peak Elev=1,955.97' Inflow=16.97 cfs 1.206 af
30.0" Round Culvert n=0.025 L=188.0' S=0.0000 '/' Outflow=16.97 cfs 1.206 af

Pond MH3: (new Pond) Peak Elev=1,956.29' Inflow=8.00 cfs 0.606 af
30.0" Round Culvert n=0.025 L=218.0' S=0.0000 '/' Outflow=8.00 cfs 0.606 af

Pond MH4: (new Pond) Peak Elev=1,998.34' Inflow=10.09 cfs 0.641 af
30.0" Round Culvert n=0.025 L=102.0' S=0.0000 '/' Outflow=10.09 cfs 0.641 af

Pond MH5: (new Pond) Peak Elev=1,985.14' Inflow=12.66 cfs 0.876 af
30.0" Round Culvert n=0.025 L=207.0' S=0.0000 '/' Outflow=12.66 cfs 0.876 af

Pond MH6: (new Pond) Peak Elev=1,977.53' Inflow=12.93 cfs 0.783 af
30.0" Round Culvert n=0.025 L=223.0' S=0.0000 '/' Outflow=12.93 cfs 0.783 af

Pond MH7: (new Pond) Peak Elev=1,980.32' Inflow=9.00 cfs 0.478 af
30.0" Round Culvert n=0.025 L=168.0' S=0.0000 '/' Outflow=9.00 cfs 0.478 af

Pond MH8: (new Pond) Peak Elev=1,987.48' Inflow=4.25 cfs 0.232 af
30.0" Round Culvert n=0.025 L=113.0' S=0.0000 '/' Outflow=4.25 cfs 0.232 af

Pond NWMH: (new Pond) Peak Elev=1,970.00' Inflow=0.00 cfs 0.000 af
18.0" Round Culvert n=0.025 L=24.0' S=0.0833 '/' Outflow=0.00 cfs 0.000 af

Pond SEMH: (new Pond) Peak Elev=1,925.26' Inflow=2.94 cfs 3.023 af
24.0" Round Culvert n=0.025 L=71.0' S=0.0000 '/' Outflow=2.94 cfs 3.023 af

Total Runoff Area = 97.739 ac Runoff Volume = 12.466 af Average Runoff Depth = 1.53"
100.00% Pervious = 97.739 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1A: (new Subcat)

Runoff = 8.85 cfs @ 12.13 hrs, Volume= 0.524 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
178,847	74	>75% Grass cover, Good, HSG C
178,847		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	261	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 1B: (new Subcat)

Runoff = 6.27 cfs @ 12.09 hrs, Volume= 0.328 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
111,895	74	>75% Grass cover, Good, HSG C
111,895		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	187	0.1500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 1C: (new Subcat)

Runoff = 7.52 cfs @ 12.05 hrs, Volume= 0.336 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
114,791	74	>75% Grass cover, Good, HSG C
114,791		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	51	0.0500	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	178	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.0	229	Total			

Summary for Subcatchment 2A: (new Subcat)

Runoff = 13.90 cfs @ 12.14 hrs, Volume= 0.872 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
297,718	74	>75% Grass cover, Good, HSG C
297,718		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 2B: (new Subcat)

Runoff = 9.92 cfs @ 12.13 hrs, Volume= 0.588 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
200,643	74	>75% Grass cover, Good, HSG C
200,643		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	260	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 2C: (new Subcat)

Runoff = 10.66 cfs @ 12.12 hrs, Volume= 0.618 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
211,164	74	>75% Grass cover, Good, HSG C
211,164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	123	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	173	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.1	296	Total			

Summary for Subcatchment 3A: (new Subcat)

Runoff = 3.15 cfs @ 12.14 hrs, Volume= 0.198 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
67,565	74	>75% Grass cover, Good, HSG C
67,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 3B: (new Subcat)

Runoff = 9.84 cfs @ 12.14 hrs, Volume= 0.606 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
206,873	74	>75% Grass cover, Good, HSG C
206,873		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	292	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 4A: (new Subcat)

Runoff = 15.86 cfs @ 12.14 hrs, Volume= 0.995 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
339,762	74	>75% Grass cover, Good, HSG C
339,762		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 4B: (new Subcat)

Runoff = 6.46 cfs @ 12.07 hrs, Volume= 0.321 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
109,746	74	>75% Grass cover, Good, HSG C
109,746		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	153	0.1500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 4C: (new Subcat)

Runoff = 6.06 cfs @ 12.09 hrs, Volume= 0.319 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
109,094	74	>75% Grass cover, Good, HSG C
109,094		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	95	0.0500	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	173	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	268	Total			

Summary for Subcatchment 5A: (new Subcat)

Runoff = 2.18 cfs @ 12.14 hrs, Volume= 0.137 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
46,695	74	>75% Grass cover, Good, HSG C
46,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 5B: (new Subcat)

Runoff = 6.74 cfs @ 12.07 hrs, Volume= 0.333 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
113,626	74	>75% Grass cover, Good, HSG C
113,626		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	149	0.1500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 5C: (new Subcat)

Runoff = 9.36 cfs @ 12.12 hrs, Volume= 0.543 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
185,512	74	>75% Grass cover, Good, HSG C
185,512		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	123	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	173	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.1	296	Total			

Summary for Subcatchment 6A: (new Subcat)

Runoff = 17.99 cfs @ 12.14 hrs, Volume= 1.129 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
385,422	74	>75% Grass cover, Good, HSG C
385,422		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 6B: (new Subcat)

Runoff = 7.25 cfs @ 12.07 hrs, Volume= 0.363 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
124,047	74	>75% Grass cover, Good, HSG C
124,047		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	156	0.1500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 6C: (new Subcat)

Runoff = 7.76 cfs @ 12.09 hrs, Volume= 0.420 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
143,402	74	>75% Grass cover, Good, HSG C
143,402		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	102	0.0500	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	178	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.7	280	Total			

Summary for Subcatchment 7A: (new Subcat)

Runoff = 15.26 cfs @ 12.13 hrs, Volume= 0.906 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
309,322	74	>75% Grass cover, Good, HSG C
309,322		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	262	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 7B: (new Subcat)

Runoff = 5.92 cfs @ 12.09 hrs, Volume= 0.317 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
108,115	74	>75% Grass cover, Good, HSG C
108,115		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	199	0.1500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 7C: (new Subcat)

Runoff = 3.16 cfs @ 12.08 hrs, Volume= 0.161 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
55,104	74	>75% Grass cover, Good, HSG C
55,104		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	170	0.1500	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 8A: (new Subcat)

Runoff = 5.52 cfs @ 12.14 hrs, Volume= 0.346 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
118,254	74	>75% Grass cover, Good, HSG C
118,254		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 8B: (new Subcat)

Runoff = 4.33 cfs @ 12.09 hrs, Volume= 0.232 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
79,083	74	>75% Grass cover, Good, HSG C
79,083		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	199	0.1500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 9A: (new Subcat)

Runoff = 18.01 cfs @ 12.14 hrs, Volume= 1.130 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
385,759	74	>75% Grass cover, Good, HSG C
385,759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 10A: (new Subcat)

Runoff = 3.90 cfs @ 12.14 hrs, Volume= 0.243 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
83,070	74	>75% Grass cover, Good, HSG C
83,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	296	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 11A: (new Subcat)

Runoff = 8.68 cfs @ 12.12 hrs, Volume= 0.504 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
172,006	74	>75% Grass cover, Good, HSG C
172,006		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	245	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

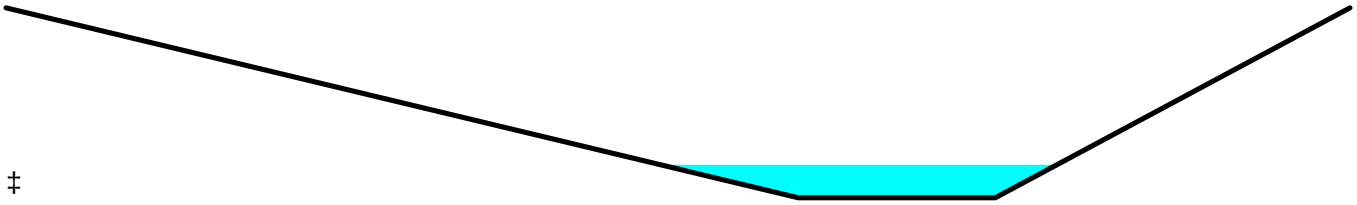
Summary for Reach 1R: (new Reach)

Inflow Area = 4.106 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 8.85 cfs @ 12.13 hrs, Volume= 0.524 af
Outflow = 7.49 cfs @ 12.20 hrs, Volume= 0.524 af, Atten= 15%, Lag= 4.4 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 1.91 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 19.5 min

Peak Storage= 2,571 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 300.24 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 657.0' Slope= 0.0053 '/'
Inlet Invert= 1,985.50', Outlet Invert= 1,982.00'



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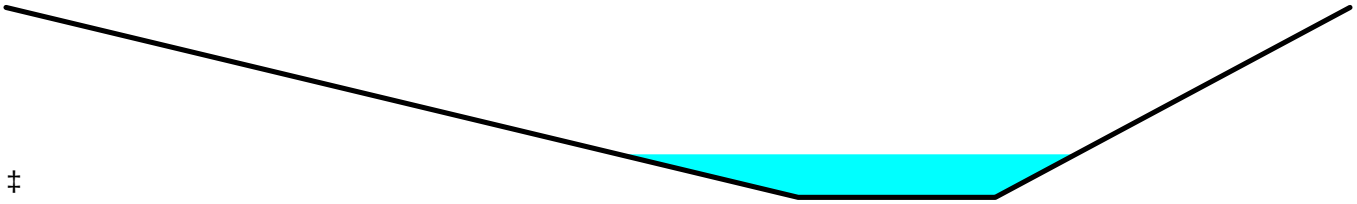
Summary for Reach 2R: (new Reach)

Inflow Area = 16.144 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 31.87 cfs @ 12.14 hrs, Volume= 2.059 af
Outflow = 30.61 cfs @ 12.18 hrs, Volume= 2.059 af, Atten= 4%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 5.40 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 10.0 min

Peak Storage= 5,350 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 732.53 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 946.0' Slope= 0.0317 '/'
Inlet Invert= 1,982.00', Outlet Invert= 1,952.00'



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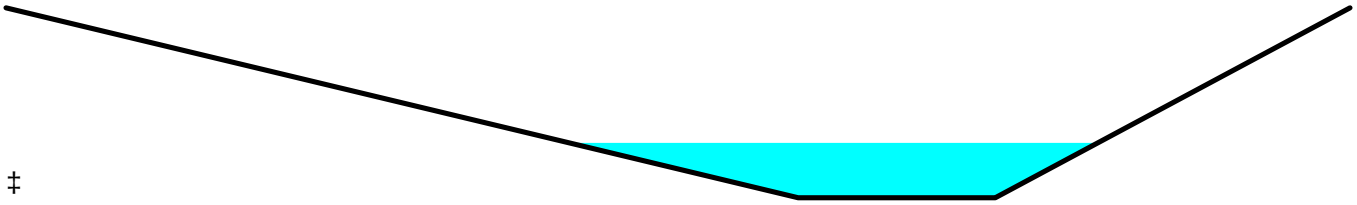
Summary for Reach 3R: (new Reach)

Inflow Area = 27.149 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 50.45 cfs @ 12.17 hrs, Volume= 3.463 af
Outflow = 50.42 cfs @ 12.17 hrs, Volume= 3.463 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 6.31 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 1.6 min

Peak Storage= 1,445 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 748.94 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 181.0' Slope= 0.0331 '/'
Inlet Invert= 1,952.00', Outlet Invert= 1,946.00'



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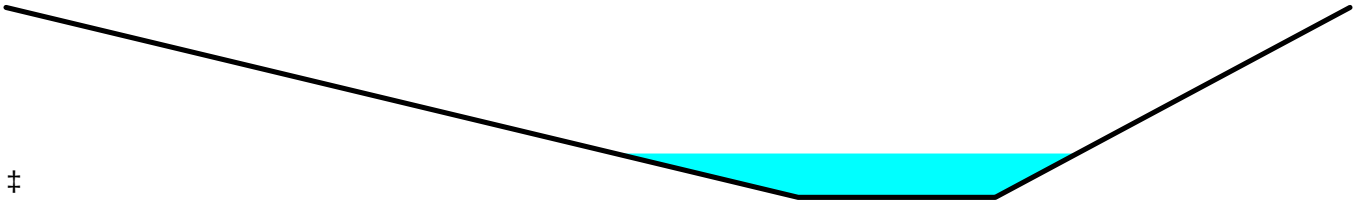
Summary for Reach 4R: (new Reach)

Inflow Area = 19.693 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 35.24 cfs @ 12.19 hrs, Volume= 2.512 af
Outflow = 35.24 cfs @ 12.20 hrs, Volume= 2.512 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 6.10 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 1.8 min

Peak Storage= 1,167 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 818.62 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 202.0' Slope= 0.0396 '/'
Inlet Invert= 1,954.00', Outlet Invert= 1,946.00'



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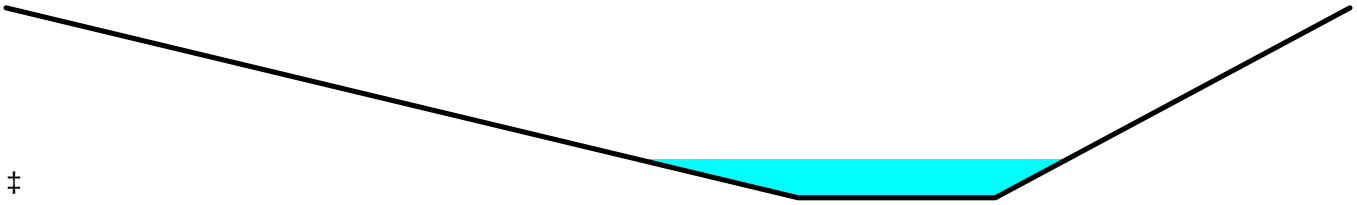
Summary for Reach 5R: (new Reach)

Inflow Area = 13.872 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 27.51 cfs @ 12.13 hrs, Volume= 1.769 af
Outflow = 25.31 cfs @ 12.19 hrs, Volume= 1.769 af, Atten= 8%, Lag= 3.5 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 5.19 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 13.7 min

Peak Storage= 6,242 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 745.73 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 1,281.0' Slope= 0.0329 '/'
Inlet Invert= 1,996.10', Outlet Invert= 1,954.00'



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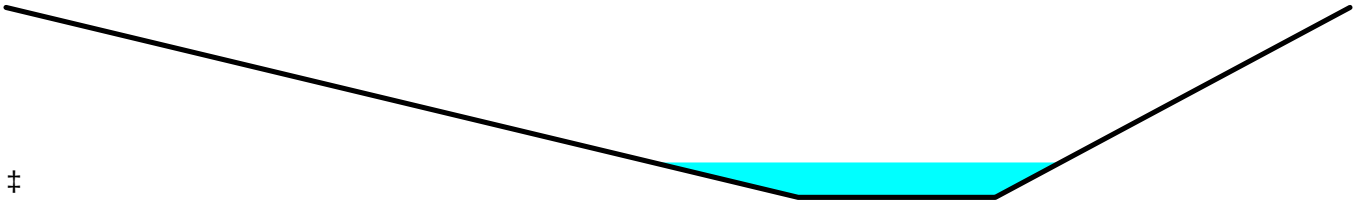
Summary for Reach 6R: (new Reach)

Inflow Area = 7.101 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 15.26 cfs @ 12.13 hrs, Volume= 0.906 af
Outflow = 12.32 cfs @ 12.21 hrs, Volume= 0.906 af, Atten= 19%, Lag= 5.2 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 2.91 fps, Min. Travel Time= 7.0 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 24.0 min

Peak Storage= 5,169 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 442.04 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 1,221.0' Slope= 0.0115 '/'
Inlet Invert= 1,996.10', Outlet Invert= 1,982.00'



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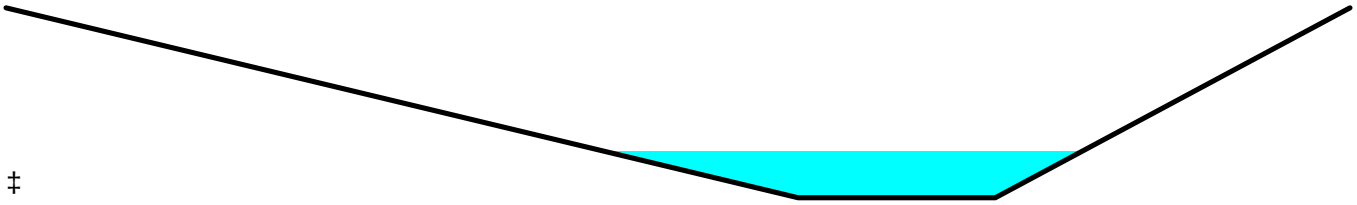
Summary for Reach 7R: (new Reach)

Inflow Area = 16.683 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 28.63 cfs @ 12.17 hrs, Volume= 2.128 af
Outflow = 28.50 cfs @ 12.19 hrs, Volume= 2.128 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 4.49 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.32 fps, Avg. Travel Time= 3.8 min

Peak Storage= 1,902 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 581.74 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 300.0' Slope= 0.0200 '/'
Inlet Invert= 1,982.00', Outlet Invert= 1,976.00'



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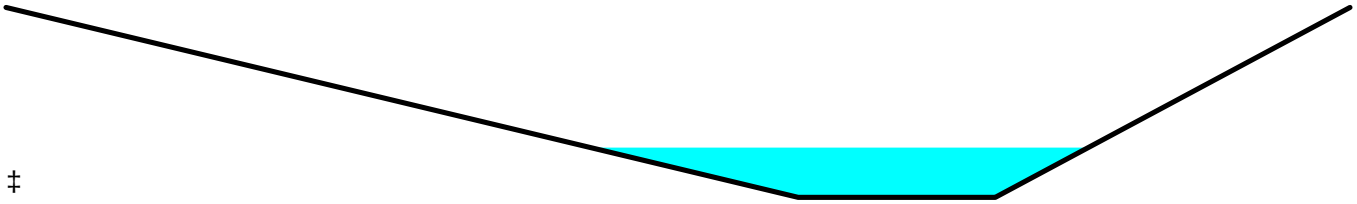
Summary for Reach 8R: (new Reach)

Inflow Area = 11.418 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 22.96 cfs @ 12.14 hrs, Volume= 1.456 af
Outflow = 22.75 cfs @ 12.15 hrs, Volume= 1.456 af, Atten= 1%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 3.29 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.96 fps, Avg. Travel Time= 3.5 min

Peak Storage= 1,384 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 411.35 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 200.0' Slope= 0.0100 '/'
Inlet Invert= 1,978.00', Outlet Invert= 1,976.00'



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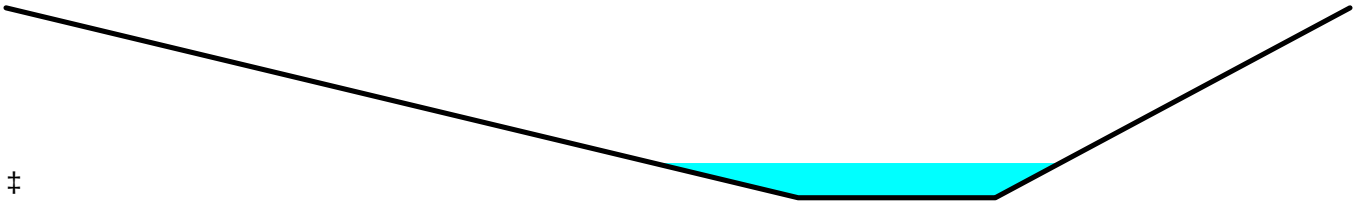
Summary for Reach 9R: (new Reach)

Inflow Area = 5.764 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.90 cfs @ 12.11 hrs, Volume= 0.735 af
Outflow = 11.33 cfs @ 12.17 hrs, Volume= 0.735 af, Atten= 12%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 2.69 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 15.9 min

Peak Storage= 3,149 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 411.35 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 750.0' Slope= 0.0100 '/'
Inlet Invert= 1,985.50', Outlet Invert= 1,978.00'



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Summary for Pond 7P: SE Pond

Inflow Area = 54.642 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 100.86 cfs @ 12.18 hrs, Volume= 6.970 af
Outflow = 2.94 cfs @ 16.29 hrs, Volume= 3.023 af, Atten= 97%, Lag= 246.9 min
Primary = 2.94 cfs @ 16.29 hrs, Volume= 3.023 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,939.11' @ 16.29 hrs Surf.Area= 55,585 sf Storage= 218,224 cf
Flood Elev= 1,944.00' Surf.Area= 82,507 sf Storage= 555,034 cf

Plug-Flow detention time= 493.0 min calculated for 3.023 af (43% of inflow)
Center-of-Mass det. time= 381.5 min (1,223.4 - 841.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,934.00'	555,034 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,934.00	30,383	0	0
1,936.00	39,866	70,249	70,249
1,938.00	49,820	89,686	159,935
1,940.00	60,245	110,065	270,000
1,942.00	71,141	131,386	401,386
1,944.00	82,507	153,648	555,034

Device	Routing	Invert	Outlet Devices
#1	Primary	1,938.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.94 cfs @ 16.29 hrs HW=1,939.11' TW=1,925.26' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 2.94 cfs @ 3.75 fps)

Summary for Pond 8P: NW Pond

Inflow Area = 43.097 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 80.35 cfs @ 12.15 hrs, Volume= 5.497 af
Outflow = 0.00 cfs @ 3.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 3.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,968.31' @ 35.00 hrs Surf.Area= 72,398 sf Storage= 239,447 cf
Flood Elev= 1,974.00' Surf.Area= 119,637 sf Storage= 784,431 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	1,964.00'	784,431 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,964.00	39,106	0	0
1,966.00	54,284	93,390	93,390
1,968.00	69,926	124,210	217,600
1,970.00	86,032	155,958	373,558
1,972.00	102,602	188,634	562,192
1,974.00	119,637	222,239	784,431

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 3.00 hrs HW=1,964.00' TW=1,970.00' (Dynamic Tailwater)
1=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond B1B: (new Pond)

Inflow Area = 2.569 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.27 cfs @ 12.09 hrs, Volume= 0.328 af
Outflow = 6.10 cfs @ 12.10 hrs, Volume= 0.328 af, Atten= 3%, Lag= 0.9 min
Primary = 6.10 cfs @ 12.10 hrs, Volume= 0.328 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,016.57' @ 12.10 hrs Surf.Area= 1,058 sf Storage= 243 cf
Flood Elev= 2,019.11' Surf.Area= 10,868 sf Storage= 12,560 cf

Plug-Flow detention time= 0.4 min calculated for 0.327 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (833.8 - 833.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,016.11'	12,560 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,016.11	5	0	0
2,018.00	4,349	4,115	4,115
2,019.11	10,868	8,445	12,560

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.11'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.99 cfs @ 12.10 hrs HW=2,016.56' TW=2,013.50' (Dynamic Tailwater)
1=Orifice/Grate (Weir Controls 5.99 cfs @ 2.20 fps)

Summary for Pond B1C: (new Pond)

Inflow Area = 2.635 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.52 cfs @ 12.05 hrs, Volume= 0.336 af
Outflow = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af, Atten= 21%, Lag= 3.0 min
Primary = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,040.80' @ 12.10 hrs Surf.Area= 1,725 sf Storage= 692 cf
Flood Elev= 2,043.00' Surf.Area= 9,630 sf Storage= 11,278 cf

Plug-Flow detention time= 0.8 min calculated for 0.336 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (831.4 - 830.7)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	11,278 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,305	4,310	4,310
2,043.00	9,630	6,968	11,278

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.88 cfs @ 12.10 hrs HW=2,040.78' TW=2,036.95' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 5.88 cfs @ 4.26 fps)

Summary for Pond B2B: (new Pond)

Inflow Area = 4.606 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.92 cfs @ 12.13 hrs, Volume= 0.588 af
Outflow = 9.86 cfs @ 12.13 hrs, Volume= 0.588 af, Atten= 1%, Lag= 0.5 min
Primary = 9.86 cfs @ 12.13 hrs, Volume= 0.588 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,000.04' @ 12.13 hrs Surf.Area= 357 sf Storage= 102 cf
Flood Elev= 2,002.35' Surf.Area= 5,788 sf Storage= 6,646 cf

Plug-Flow detention time= 0.1 min calculated for 0.587 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (836.0 - 835.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,999.35'	6,646 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,999.35	5	0	0
2,000.00	270	89	89
2,002.00	4,488	4,758	4,847
2,002.35	5,788	1,798	6,646

Device	Routing	Invert	Outlet Devices
#1	Primary	1,999.35'	**21.2" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.73 cfs @ 12.13 hrs HW=2,000.03' TW=1,997.74' (Dynamic Tailwater)
↳**1=Orifice/Grate** (Orifice Controls 9.73 cfs @ 3.97 fps)

Summary for Pond B2C: (new Pond)

Inflow Area = 4.848 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 10.66 cfs @ 12.12 hrs, Volume= 0.618 af
Outflow = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af, Atten= 29%, Lag= 6.7 min
Primary = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,041.29' @ 12.23 hrs Surf.Area= 3,442 sf Storage= 2,228 cf
Flood Elev= 2,043.00' Surf.Area= 11,914 sf Storage= 13,942 cf

Plug-Flow detention time= 1.9 min calculated for 0.618 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (837.3 - 835.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	13,942 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	5,320	5,325	5,325
2,043.00	11,914	8,617	13,942

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.54 cfs @ 12.23 hrs HW=2,041.29' TW=2,037.45' (Dynamic Tailwater)
↳**1=Orifice/Grate** (Orifice Controls 7.54 cfs @ 5.47 fps)

Summary for Pond B3B: (new Pond)

Inflow Area = 4.749 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.84 cfs @ 12.14 hrs, Volume= 0.606 af
Outflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af, Atten= 19%, Lag= 5.3 min
Primary = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,001.45' @ 12.23 hrs Surf.Area= 1,881 sf Storage= 1,368 cf
Flood Elev= 2,003.00' Surf.Area= 5,648 sf Storage= 6,717 cf

Plug-Flow detention time= 1.0 min calculated for 0.605 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (838.0 - 837.0)

Volume	Invert	Avail.Storage	Storage Description
#1	2,000.00'	6,717 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,000.00	5	0	0
2,002.00	2,592	2,597	2,597
2,003.00	5,648	4,120	6,717

Device	Routing	Invert	Outlet Devices
#1	Primary	2,000.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.97 cfs @ 12.23 hrs HW=2,001.44' TW=1,996.86' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 7.97 cfs @ 5.78 fps)

Summary for Pond B4B: (new Pond)

Inflow Area = 2.519 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.46 cfs @ 12.07 hrs, Volume= 0.321 af
Outflow = 6.46 cfs @ 12.07 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.3 min
Primary = 6.46 cfs @ 12.07 hrs, Volume= 0.321 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,020.05' @ 12.07 hrs Surf.Area= 395 sf Storage= 66 cf
Flood Elev= 2,022.57' Surf.Area= 11,249 sf Storage= 12,883 cf

Plug-Flow detention time= 0.1 min calculated for 0.321 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (832.2 - 832.1)

Volume	Invert	Avail.Storage	Storage Description
#1	2,019.57'	12,883 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,019.57	5	0	0
2,020.00	233	51	51
2,022.00	7,310	7,543	7,594
2,022.57	11,249	5,289	12,883

Device	Routing	Invert	Outlet Devices
#1	Primary	2,019.57'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.36 cfs @ 12.07 hrs HW=2,020.04' TW=2,016.63' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 6.36 cfs @ 2.24 fps)

Summary for Pond B4C: (new Pond)

Inflow Area = 2.504 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.06 cfs @ 12.09 hrs, Volume= 0.319 af
Outflow = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af, Atten= 26%, Lag= 5.2 min
Primary = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,041.12' @ 12.17 hrs Surf.Area= 2,613 sf Storage= 1,471 cf
Flood Elev= 2,043.00' Surf.Area= 10,437 sf Storage= 12,194 cf

Plug-Flow detention time= 4.5 min calculated for 0.319 af (100% of inflow)
Center-of-Mass det. time= 4.5 min (838.1 - 833.6)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	12,194 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,647	4,652	4,652
2,043.00	10,437	7,542	12,194

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.47 cfs @ 12.17 hrs HW=2,041.12' TW=2,036.45' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 4.47 cfs @ 3.60 fps)

Summary for Pond B5B: (new Pond)

Inflow Area = 2.608 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.74 cfs @ 12.07 hrs, Volume= 0.333 af
Outflow = 6.71 cfs @ 12.08 hrs, Volume= 0.333 af, Atten= 0%, Lag= 1.0 min
Primary = 6.71 cfs @ 12.08 hrs, Volume= 0.333 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,020.94' @ 12.08 hrs Surf.Area= 1,007 sf Storage= 247 cf
Flood Elev= 2,023.45' Surf.Area= 11,886 sf Storage= 13,400 cf

Plug-Flow detention time= 0.4 min calculated for 0.332 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (832.4 - 832.0)

Volume	Invert	Avail.Storage	Storage Description
#1	2,020.45'	13,400 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,020.45	5	0	0
2,022.00	3,186	2,473	2,473
2,023.45	11,886	10,927	13,400

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.45'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.69 cfs @ 12.08 hrs HW=2,020.94' TW=2,017.95' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 6.69 cfs @ 2.28 fps)

Summary for Pond B5C: (new Pond)

Inflow Area = 4.259 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.36 cfs @ 12.12 hrs, Volume= 0.543 af
Outflow = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af, Atten= 24%, Lag= 5.7 min
Primary = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,041.14' @ 12.21 hrs Surf.Area= 2,830 sf Storage= 1,614 cf
Flood Elev= 2,043.00' Surf.Area= 11,094 sf Storage= 13,001 cf

Plug-Flow detention time= 1.5 min calculated for 0.543 af (100% of inflow)
Center-of-Mass det. time= 1.5 min (836.9 - 835.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	13,001 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,966	4,971	4,971
2,043.00	11,094	8,030	13,001

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.06 cfs @ 12.21 hrs HW=2,041.13' TW=2,037.29' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 7.06 cfs @ 5.12 fps)

Summary for Pond B6B: (new Pond)

Inflow Area = 2.848 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.25 cfs @ 12.07 hrs, Volume= 0.363 af
Outflow = 7.25 cfs @ 12.08 hrs, Volume= 0.363 af, Atten= 0%, Lag= 0.6 min
Primary = 7.25 cfs @ 12.08 hrs, Volume= 0.363 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3

Peak Elev= 2,017.08' @ 12.08 hrs Surf.Area= 735 sf Storage= 190 cf
Flood Elev= 2,019.57' Surf.Area= 8,958 sf Storage= 10,093 cf

Plug-Flow detention time= 0.3 min calculated for 0.363 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (832.6 - 832.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,016.57'	10,093 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,016.57	5	0	0
2,018.00	2,038	1,461	1,461
2,019.57	8,958	8,632	10,093

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.57'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.21 cfs @ 12.08 hrs HW=2,017.08' TW=2,014.13' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 7.21 cfs @ 2.34 fps)

Summary for Pond B6C: (new Pond)

Inflow Area = 3.292 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.76 cfs @ 12.09 hrs, Volume= 0.420 af
Outflow = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af, Atten= 19%, Lag= 4.3 min
Primary = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,040.89' @ 12.17 hrs Surf.Area= 2,026 sf Storage= 908 cf
Flood Elev= 2,043.00' Surf.Area= 10,157 sf Storage= 11,874 cf

Plug-Flow detention time= 1.0 min calculated for 0.419 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (835.1 - 834.1)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	11,874 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,527	4,532	4,532
2,043.00	10,157	7,342	11,874

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.26 cfs @ 12.17 hrs HW=2,040.89' TW=2,037.05' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 6.26 cfs @ 4.54 fps)

Summary for Pond B7B: (new Pond)

Inflow Area = 2.482 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 5.92 cfs @ 12.09 hrs, Volume= 0.317 af
Outflow = 5.89 cfs @ 12.10 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.4 min
Primary = 5.89 cfs @ 12.10 hrs, Volume= 0.317 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,013.22' @ 12.10 hrs Surf.Area= 491 sf Storage= 111 cf
Flood Elev= 2,015.77' Surf.Area= 7,413 sf Storage= 8,577 cf

Plug-Flow detention time= 0.2 min calculated for 0.316 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (834.0 - 833.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,012.77'	8,577 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,012.77	5	0	0
2,014.00	1,342	828	828
2,015.77	7,413	7,748	8,577

Device	Routing	Invert	Outlet Devices
#1	Primary	2,012.77'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.73 cfs @ 12.10 hrs HW=2,013.21' TW=2,009.71' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 5.73 cfs @ 2.17 fps)

Summary for Pond B7C: (new Pond)

Inflow Area = 1.265 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 3.16 cfs @ 12.08 hrs, Volume= 0.161 af
Outflow = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af, Atten= 1%, Lag= 0.8 min
Primary = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,040.37' @ 12.09 hrs Surf.Area= 652 sf Storage= 123 cf
Flood Elev= 2,043.00' Surf.Area= 7,824 sf Storage= 9,109 cf

Plug-Flow detention time= 0.4 min calculated for 0.161 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (833.2 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	9,109 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	3,461	3,466	3,466
2,043.00	7,824	5,643	9,109

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.04 cfs @ 12.09 hrs HW=2,040.37' TW=2,036.37' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 3.04 cfs @ 1.98 fps)

Summary for Pond B8B: (new Pond)

Inflow Area = 1.815 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 4.33 cfs @ 12.09 hrs, Volume= 0.232 af
Outflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af, Atten= 2%, Lag= 0.6 min
Primary = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,013.30' @ 12.10 hrs Surf.Area= 463 sf Storage= 108 cf
Flood Elev= 2,015.84' Surf.Area= 7,724 sf Storage= 8,846 cf

Plug-Flow detention time= 0.3 min calculated for 0.231 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (834.1 - 833.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,012.84'	8,846 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,012.84	5	0	0
2,014.00	1,158	675	675
2,015.84	7,724	8,171	8,846

Device	Routing	Invert	Outlet Devices
#1	Primary	2,012.84'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.18 cfs @ 12.10 hrs HW=2,013.30' TW=2,009.41' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 4.18 cfs @ 2.21 fps)

Summary for Pond C1B: (new Pond)

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af
Outflow = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min
Primary = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3

Peak Elev= 2,013.54' @ 12.10 hrs
Flood Elev= 2,016.11'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,011.61'	**21.2" Round Culvert** L= 104.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,011.61' / 2,002.00' S= 0.0924 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=11.86 cfs @ 12.10 hrs HW=2,013.50' TW=1,988.72' (Dynamic Tailwater)
1=Culvert (Inlet Controls 11.86 cfs @ 4.84 fps)

Summary for Pond C1C: (new Pond)

Inflow Area = 2.635 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af
Outflow = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af, Atten= 0%, Lag= 0.0 min
Primary = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,036.96' @ 12.10 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 205.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,011.61' S= 0.1165 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=5.88 cfs @ 12.10 hrs HW=2,036.95' TW=2,013.50' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.88 cfs @ 4.26 fps)

Summary for Pond C2B: (new Pond)

Inflow Area = 9.454 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af
Outflow = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af, Atten= 0%, Lag= 0.0 min
Primary = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,997.80' @ 12.15 hrs
Flood Elev= 1,999.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,994.85'	**21.2" Round Culvert** L= 177.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,994.85' / 1,976.00' S= 0.1065 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=16.82 cfs @ 12.15 hrs HW=1,997.76' TW=1,955.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 16.82 cfs @ 6.86 fps)

Summary for Pond C2C: (new Pond)

Inflow Area = 4.848 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af
Outflow = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af, Atten= 0%, Lag= 0.0 min
Primary = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,037.46' @ 12.23 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 317.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 1,994.85' S= 0.1282 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=7.54 cfs @ 12.23 hrs HW=2,037.45' TW=1,997.34' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.54 cfs @ 5.47 fps)

Summary for Pond C3B: (new Pond)

Inflow Area = 4.749 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af
Outflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.0 min
Primary = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,996.86' @ 12.23 hrs
Flood Elev= 2,000.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,995.50'	**21.1" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,995.50' / 1,982.00' S= 0.0900 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.43 sf

Primary OutFlow Max=7.97 cfs @ 12.23 hrs HW=1,996.86' TW=1,956.29' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.97 cfs @ 3.97 fps)

Summary for Pond C4B: (new Pond)

Inflow Area = 5.024 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af
Outflow = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af, Atten= 0%, Lag= 0.0 min
Primary = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,016.67' @ 12.09 hrs
Flood Elev= 2,019.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,015.07'	**21.2" Round Culvert** L= 164.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,015.07' / 2,006.00' S= 0.0553 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=9.89 cfs @ 12.09 hrs HW=2,016.65' TW=1,998.31' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 9.89 cfs @ 4.28 fps)

Summary for Pond C4C: (new Pond)

Inflow Area = 2.504 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af
Outflow = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.0 min
Primary = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,036.46' @ 12.17 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**21.2" Round Culvert** L= 479.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,015.07' S= 0.0427 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=4.47 cfs @ 12.17 hrs HW=2,036.45' TW=2,016.49' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.47 cfs @ 3.32 fps)

Summary for Pond C5B: (new Pond)

Inflow Area = 6.867 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af
Outflow = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af, Atten= 0%, Lag= 0.0 min
Primary = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,017.98' @ 12.10 hrs
Flood Elev= 2,020.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,015.95'	**21.2" Round Culvert** L= 105.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,015.95' / 2,008.00' S= 0.0757 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=12.44 cfs @ 12.10 hrs HW=2,017.94' TW=1,985.09' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 12.44 cfs @ 5.07 fps)

Summary for Pond C5C: (new Pond)

Inflow Area = 4.259 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af
Outflow = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af, Atten= 0%, Lag= 0.0 min
Primary = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,037.30' @ 12.21 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 184.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,015.95' S= 0.1062 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=7.06 cfs @ 12.21 hrs HW=2,037.29' TW=2,017.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.06 cfs @ 5.12 fps)

Summary for Pond C6B: (new Pond)

Inflow Area = 6.140 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af
Outflow = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af, Atten= 0%, Lag= 0.0 min
Primary = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,014.15' @ 12.09 hrs
Flood Elev= 2,016.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,012.07'	**21.2" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,012.07' / 2,004.00' S= 0.0791 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=12.70 cfs @ 12.09 hrs HW=2,014.11' TW=1,977.45' (Dynamic Tailwater)
1=Culvert (Inlet Controls 12.70 cfs @ 5.18 fps)

Summary for Pond C6C: (new Pond)

Inflow Area = 3.292 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af
Outflow = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af, Atten= 0%, Lag= 0.0 min
Primary = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,037.06' @ 12.17 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 202.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,012.07' S= 0.1160 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=6.26 cfs @ 12.17 hrs HW=2,037.05' TW=2,013.87' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 6.26 cfs @ 4.54 fps)

Summary for Pond C7B: (new Pond)

Inflow Area = 3.747 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af
Outflow = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min
Primary = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,009.74' @ 12.10 hrs
Flood Elev= 2,012.77'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,008.27'	**21.2" Round Culvert** L= 115.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,008.27' / 2,000.00' S= 0.0719 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=8.76 cfs @ 12.10 hrs HW=2,009.71' TW=1,980.28' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.76 cfs @ 4.09 fps)

Summary for Pond C7C: (new Pond)

Inflow Area = 1.265 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af
Outflow = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min
Primary = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,036.38' @ 12.09 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,008.27' S= 0.1076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=3.04 cfs @ 12.09 hrs HW=2,036.37' TW=2,009.71' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.04 cfs @ 3.17 fps)

Summary for Pond C8B: (new Pond)

Inflow Area = 1.815 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af
Outflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Primary = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,009.42' @ 12.10 hrs
Flood Elev= 2,012.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,008.34'	**15.9" Round Culvert** L= 146.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,008.34' / 2,000.00' S= 0.0571 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=4.18 cfs @ 12.10 hrs HW=2,009.41' TW=1,987.47' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.18 cfs @ 3.52 fps)

Summary for Pond MH1: Drop MH

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af
Outflow = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min
Primary = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,988.76' @ 12.10 hrs
Flood Elev= 2,007.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,986.00'	**30.0" Round Culvert** L= 161.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,986.00' / 1,986.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=11.86 cfs @ 12.10 hrs HW=1,988.72' TW=1,982.60' (Dynamic Tailwater)
1=Culvert (Barrel Controls 11.86 cfs @ 2.76 fps)

Summary for Pond MH2: (new Pond)

Inflow Area = 9.454 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af
Outflow = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af, Atten= 0%, Lag= 0.0 min
Primary = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,955.97' @ 12.15 hrs
Flood Elev= 1,980.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,952.00'	**30.0" Round Culvert** L= 188.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,952.00' / 1,952.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=16.82 cfs @ 12.15 hrs HW=1,955.95' TW=1,952.85' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 16.82 cfs @ 3.43 fps)

Summary for Pond MH3: (new Pond)

Inflow Area = 4.749 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af
Outflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.0 min
Primary = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,956.29' @ 12.23 hrs
Flood Elev= 1,986.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,954.00'	**30.0" Round Culvert** L= 218.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,954.00' / 1,954.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=7.97 cfs @ 12.23 hrs HW=1,956.29' TW=1,954.68' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 7.97 cfs @ 2.22 fps)

Summary for Pond MH4: (new Pond)

Inflow Area = 5.024 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af
Outflow = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af, Atten= 0%, Lag= 0.0 min
Primary = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,998.34' @ 12.09 hrs
Flood Elev= 2,010.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,996.10'	**30.0" Round Culvert** L= 102.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,996.10' / 1,996.10' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=9.89 cfs @ 12.09 hrs HW=1,998.31' TW=1,996.62' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 9.89 cfs @ 2.86 fps)

Summary for Pond MH5: (new Pond)

Inflow Area = 6.867 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af
Outflow = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af, Atten= 0%, Lag= 0.0 min
Primary = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,985.14' @ 12.10 hrs
Flood Elev= 2,012.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,982.00'	**30.0" Round Culvert** L= 207.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,982.00' / 1,982.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=12.44 cfs @ 12.10 hrs HW=1,985.09' TW=1,982.67' (Dynamic Tailwater)
1=Culvert (Barrel Controls 12.44 cfs @ 2.62 fps)

Summary for Pond MH6: (new Pond)

Inflow Area = 6.140 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af
Outflow = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af, Atten= 0%, Lag= 0.0 min
Primary = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,977.53' @ 12.10 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,974.00'	**30.0" Round Culvert** L= 223.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,974.00' / 1,974.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=12.70 cfs @ 12.09 hrs HW=1,977.45' TW=1,964.75' (Dynamic Tailwater)
1=Culvert (Barrel Controls 12.70 cfs @ 2.59 fps)

Summary for Pond MH7: (new Pond)

Inflow Area = 3.747 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af
Outflow = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min
Primary = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,980.32' @ 12.10 hrs
Flood Elev= 2,004.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,978.00'	**30.0" Round Culvert** L= 168.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,978.00' / 1,978.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=8.76 cfs @ 12.10 hrs HW=1,980.28' TW=1,978.73' (Dynamic Tailwater)
1=Culvert (Barrel Controls 8.76 cfs @ 2.45 fps)

Summary for Pond MH8: (new Pond)

Inflow Area = 1.815 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af
Outflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Primary = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,987.48' @ 12.10 hrs
Flood Elev= 2,004.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,986.00'	**30.0" Round Culvert** L= 113.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,986.00' / 1,986.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=4.18 cfs @ 12.10 hrs HW=1,987.47' TW=1,985.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.18 cfs @ 2.01 fps)

Summary for Pond NWMH: (new Pond)

Inflow Area = 43.097 ac, 0.00% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.00 cfs @ 3.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 3.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 3.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,970.00' @ 3.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**18.0" Round Culvert** L= 24.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,970.00' / 1,968.00' S= 0.0833 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 3.00 hrs HW=1,970.00' (Free Discharge)
1=Culvert (Controls 0.00 cfs)

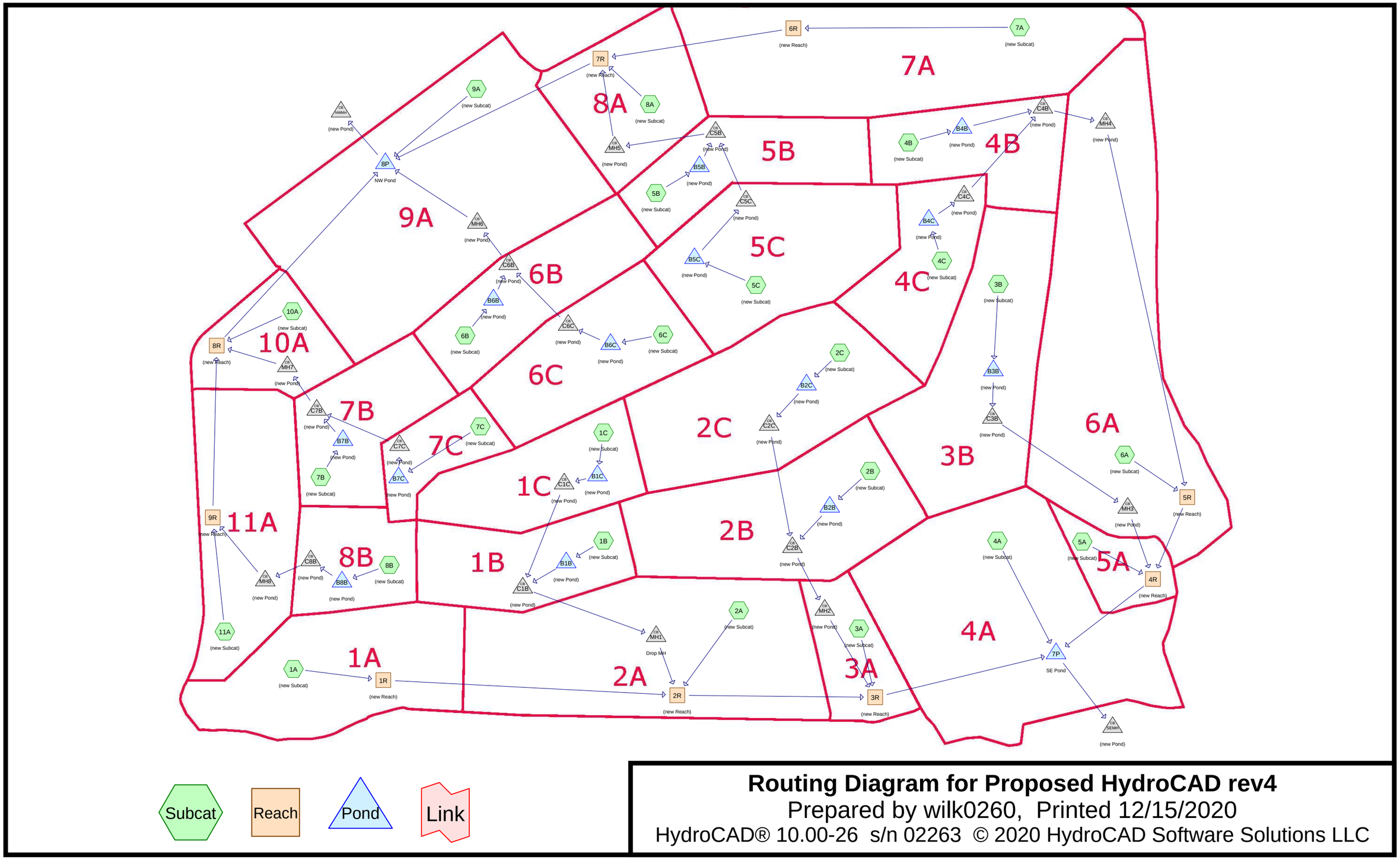
Summary for Pond SEMH: (new Pond)

Inflow Area = 54.642 ac, 0.00% Impervious, Inflow Depth > 0.66" for 25-yr event
Inflow = 2.94 cfs @ 16.29 hrs, Volume= 3.023 af
Outflow = 2.94 cfs @ 16.29 hrs, Volume= 3.023 af, Atten= 0%, Lag= 0.0 min
Primary = 2.94 cfs @ 16.29 hrs, Volume= 3.023 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,925.26' @ 16.29 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,924.00'	**24.0" Round Culvert** L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,924.00' / 1,924.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=2.94 cfs @ 16.29 hrs HW=1,925.26' (Free Discharge)
1=Culvert (Barrel Controls 2.94 cfs @ 2.02 fps)



Routing Diagram for Proposed HydroCAD rev4

Prepared by wilk0260, Printed 12/15/2020

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
97.739	74	>75% Grass cover, Good, HSG C (1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, 4A, 4B, 4C, 5A, 5B, 5C, 6A, 6B, 6C, 7A, 7B, 7C, 8A, 8B, 9A, 10A, 11A)
97.739	**74**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
97.739	HSG C	1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, 4A, 4B, 4C, 5A, 5B, 5C, 6A, 6B, 6C, 7A, 7B, 7C, 8A, 8B, 9A, 10A, 11A
0.000	HSG D	
0.000	Other	
97.739		**TOTAL AREA**

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	C1B	2,011.61	2,002.00	104.0	0.0924	0.010	21.2	0.0	0.0
2	C1C	2,035.50	2,011.61	205.0	0.1165	0.010	15.9	0.0	0.0
3	C2B	1,994.85	1,976.00	177.0	0.1065	0.010	21.2	0.0	0.0
4	C2C	2,035.50	1,994.85	317.0	0.1282	0.010	15.9	0.0	0.0
5	C3B	1,995.50	1,982.00	150.0	0.0900	0.010	21.1	0.0	0.0
6	C4B	2,015.07	2,006.00	164.0	0.0553	0.010	21.2	0.0	0.0
7	C4C	2,035.50	2,015.07	479.0	0.0427	0.010	21.2	0.0	0.0
8	C5B	2,015.95	2,008.00	105.0	0.0757	0.010	21.2	0.0	0.0
9	C5C	2,035.50	2,015.95	184.0	0.1062	0.010	15.9	0.0	0.0
10	C6B	2,012.07	2,004.00	102.0	0.0791	0.010	21.2	0.0	0.0
11	C6C	2,035.50	2,012.07	202.0	0.1160	0.010	15.9	0.0	0.0
12	C7B	2,008.27	2,000.00	115.0	0.0719	0.010	21.2	0.0	0.0
13	C7C	2,035.50	2,008.27	253.0	0.1076	0.010	15.9	0.0	0.0
14	C8B	2,008.34	2,000.00	146.0	0.0571	0.010	15.9	0.0	0.0
15	MH1	1,986.00	1,986.00	161.0	0.0000	0.025	30.0	0.0	0.0
16	MH2	1,952.00	1,952.00	188.0	0.0000	0.025	30.0	0.0	0.0
17	MH3	1,954.00	1,954.00	218.0	0.0000	0.025	30.0	0.0	0.0
18	MH4	1,996.10	1,996.10	102.0	0.0000	0.025	30.0	0.0	0.0
19	MH5	1,982.00	1,982.00	207.0	0.0000	0.025	30.0	0.0	0.0
20	MH6	1,974.00	1,974.00	223.0	0.0000	0.025	30.0	0.0	0.0
21	MH7	1,978.00	1,978.00	168.0	0.0000	0.025	30.0	0.0	0.0
22	MH8	1,986.00	1,986.00	113.0	0.0000	0.025	30.0	0.0	0.0
23	NWMH	1,970.00	1,968.00	24.0	0.0833	0.025	18.0	0.0	0.0
24	SEMH	1,924.00	1,924.00	71.0	0.0000	0.025	24.0	0.0	0.0

Time span=3.00-35.00 hrs, dt=0.04 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1A: (new Subcat) Runoff Area=178,847 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=261' Slope=0.1500 '/' Tc=11.7 min CN=74 Runoff=8.85 cfs 0.524 af

Subcatchment1B: (new Subcat) Runoff Area=111,895 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=187' Slope=0.1500 '/' Tc=9.0 min CN=74 Runoff=6.27 cfs 0.328 af

Subcatchment1C: (new Subcat) Runoff Area=114,791 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=229' Tc=6.0 min CN=74 Runoff=7.52 cfs 0.336 af

Subcatchment2A: (new Subcat) Runoff Area=297,718 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=13.90 cfs 0.872 af

Subcatchment2B: (new Subcat) Runoff Area=200,643 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=260' Slope=0.1500 '/' Tc=11.7 min CN=74 Runoff=9.92 cfs 0.588 af

Subcatchment2C: (new Subcat) Runoff Area=211,164 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=296' Tc=11.1 min CN=74 Runoff=10.66 cfs 0.618 af

Subcatchment3A: (new Subcat) Runoff Area=67,565 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=3.15 cfs 0.198 af

Subcatchment3B: (new Subcat) Runoff Area=206,873 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=292' Slope=0.1500 '/' Tc=12.8 min CN=74 Runoff=9.84 cfs 0.606 af

Subcatchment4A: (new Subcat) Runoff Area=339,762 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=15.86 cfs 0.995 af

Subcatchment4B: (new Subcat) Runoff Area=109,746 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=153' Slope=0.1500 '/' Tc=7.6 min CN=74 Runoff=6.46 cfs 0.321 af

Subcatchment4C: (new Subcat) Runoff Area=109,094 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=268' Tc=9.2 min CN=74 Runoff=6.06 cfs 0.319 af

Subcatchment5A: (new Subcat) Runoff Area=46,695 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=2.18 cfs 0.137 af

Subcatchment5B: (new Subcat) Runoff Area=113,626 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=149' Slope=0.1500 '/' Tc=7.5 min CN=74 Runoff=6.74 cfs 0.333 af

Subcatchment5C: (new Subcat) Runoff Area=185,512 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=296' Tc=11.1 min CN=74 Runoff=9.36 cfs 0.543 af

Subcatchment6A: (new Subcat) Runoff Area=385,422 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=17.99 cfs 1.129 af

Subcatchment6B: (new Subcat) Runoff Area=124,047 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=156' Slope=0.1500 '/' Tc=7.8 min CN=74 Runoff=7.25 cfs 0.363 af

Subcatchment 6C: (new Subcat) Runoff Area=143,402 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=280' Tc=9.7 min CN=74 Runoff=7.76 cfs 0.420 af

Subcatchment 7A: (new Subcat) Runoff Area=309,322 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=262' Slope=0.1500 '/' Tc=11.8 min CN=74 Runoff=15.26 cfs 0.906 af

Subcatchment 7B: (new Subcat) Runoff Area=108,115 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=199' Slope=0.1500 '/' Tc=9.4 min CN=74 Runoff=5.92 cfs 0.317 af

Subcatchment 7C: (new Subcat) Runoff Area=55,104 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=170' Slope=0.1500 '/' Tc=8.3 min CN=74 Runoff=3.16 cfs 0.161 af

Subcatchment 8A: (new Subcat) Runoff Area=118,254 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=5.52 cfs 0.346 af

Subcatchment 8B: (new Subcat) Runoff Area=79,083 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=199' Slope=0.1500 '/' Tc=9.4 min CN=74 Runoff=4.33 cfs 0.232 af

Subcatchment 9A: (new Subcat) Runoff Area=385,759 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=18.01 cfs 1.130 af

Subcatchment 10A: (new Subcat) Runoff Area=83,070 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=296' Slope=0.1500 '/' Tc=13.0 min CN=74 Runoff=3.90 cfs 0.243 af

Subcatchment 11A: (new Subcat) Runoff Area=172,006 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=245' Slope=0.1500 '/' Tc=11.1 min CN=74 Runoff=8.68 cfs 0.504 af

Reach 1R: (new Reach) Avg. Flow Depth=0.52' Max Vel=1.91 fps Inflow=8.85 cfs 0.524 af
n=0.030 L=657.0' S=0.0053 '/' Capacity=300.24 cfs Outflow=7.49 cfs 0.524 af

Reach 2R: (new Reach) Avg. Flow Depth=0.68' Max Vel=5.40 fps Inflow=31.87 cfs 2.059 af
n=0.030 L=946.0' S=0.0317 '/' Capacity=732.53 cfs Outflow=30.61 cfs 2.059 af

Reach 3R: (new Reach) Avg. Flow Depth=0.87' Max Vel=6.31 fps Inflow=50.45 cfs 3.463 af
n=0.030 L=181.0' S=0.0331 '/' Capacity=748.94 cfs Outflow=50.42 cfs 3.463 af

Reach 4R: (new Reach) Avg. Flow Depth=0.69' Max Vel=6.10 fps Inflow=35.24 cfs 2.512 af
n=0.030 L=202.0' S=0.0396 '/' Capacity=818.62 cfs Outflow=35.24 cfs 2.512 af

Reach 5R: (new Reach) Avg. Flow Depth=0.61' Max Vel=5.19 fps Inflow=27.51 cfs 1.769 af
n=0.030 L=1,281.0' S=0.0329 '/' Capacity=745.73 cfs Outflow=25.31 cfs 1.769 af

Reach 6R: (new Reach) Avg. Flow Depth=0.55' Max Vel=2.91 fps Inflow=15.26 cfs 0.906 af
n=0.030 L=1,221.0' S=0.0115 '/' Capacity=442.04 cfs Outflow=12.32 cfs 0.906 af

Reach 7R: (new Reach) Avg. Flow Depth=0.74' Max Vel=4.49 fps Inflow=28.63 cfs 2.128 af
n=0.030 L=300.0' S=0.0200 '/' Capacity=581.74 cfs Outflow=28.50 cfs 2.128 af

Reach 8R: (new Reach) Avg. Flow Depth=0.79' Max Vel=3.29 fps Inflow=22.96 cfs 1.456 af
n=0.030 L=200.0' S=0.0100 '/' Capacity=411.35 cfs Outflow=22.75 cfs 1.456 af

Reach 9R: (new Reach) Avg. Flow Depth=0.55' Max Vel=2.69 fps Inflow=12.90 cfs 0.735 af
n=0.030 L=750.0' S=0.0100 '/' Capacity=411.35 cfs Outflow=11.33 cfs 0.735 af

Pond 7P: SE Pond Peak Elev=1,941.09' Storage=338,926 cf Inflow=100.86 cfs 6.970 af
Outflow=6.09 cfs 6.597 af

Pond 8P: NW Pond Peak Elev=1,971.65' Storage=526,536 cf Inflow=80.35 cfs 5.497 af
Outflow=3.34 cfs 4.402 af

Pond B1B: (new Pond) Peak Elev=2,016.57' Storage=243 cf Inflow=6.27 cfs 0.328 af
Outflow=6.10 cfs 0.328 af

Pond B1C: (new Pond) Peak Elev=2,040.80' Storage=692 cf Inflow=7.52 cfs 0.336 af
Outflow=5.94 cfs 0.336 af

Pond B2B: (new Pond) Peak Elev=2,000.04' Storage=102 cf Inflow=9.92 cfs 0.588 af
Outflow=9.86 cfs 0.588 af

Pond B2C: (new Pond) Peak Elev=2,041.29' Storage=2,228 cf Inflow=10.66 cfs 0.618 af
Outflow=7.55 cfs 0.618 af

Pond B3B: (new Pond) Peak Elev=2,001.45' Storage=1,368 cf Inflow=9.84 cfs 0.606 af
Outflow=8.00 cfs 0.606 af

Pond B4B: (new Pond) Peak Elev=2,020.05' Storage=66 cf Inflow=6.46 cfs 0.321 af
Outflow=6.46 cfs 0.321 af

Pond B4C: (new Pond) Peak Elev=2,041.12' Storage=1,471 cf Inflow=6.06 cfs 0.319 af
Outflow=4.50 cfs 0.319 af

Pond B5B: (new Pond) Peak Elev=2,020.94' Storage=247 cf Inflow=6.74 cfs 0.333 af
Outflow=6.71 cfs 0.333 af

Pond B5C: (new Pond) Peak Elev=2,041.14' Storage=1,614 cf Inflow=9.36 cfs 0.543 af
Outflow=7.09 cfs 0.543 af

Pond B6B: (new Pond) Peak Elev=2,017.08' Storage=190 cf Inflow=7.25 cfs 0.363 af
Outflow=7.25 cfs 0.363 af

Pond B6C: (new Pond) Peak Elev=2,040.89' Storage=908 cf Inflow=7.76 cfs 0.420 af
Outflow=6.28 cfs 0.420 af

Pond B7B: (new Pond) Peak Elev=2,013.22' Storage=111 cf Inflow=5.92 cfs 0.317 af
Outflow=5.89 cfs 0.317 af

Pond B7C: (new Pond) Peak Elev=2,040.37' Storage=123 cf Inflow=3.16 cfs 0.161 af
Outflow=3.12 cfs 0.161 af

Pond B8B: (new Pond) Peak Elev=2,013.30' Storage=108 cf Inflow=4.33 cfs 0.232 af
Outflow=4.25 cfs 0.232 af

Pond C1B: (new Pond) Peak Elev=2,013.54' Inflow=12.09 cfs 0.664 af
21.2" Round Culvert n=0.010 L=104.0' S=0.0924 '/' Outflow=12.09 cfs 0.664 af

Pond C1C: (new Pond) Peak Elev=2,036.96' Inflow=5.94 cfs 0.336 af
15.9" Round Culvert n=0.010 L=205.0' S=0.1165 '/' Outflow=5.94 cfs 0.336 af

Pond C2B: (new Pond) Peak Elev=1,997.80' Inflow=16.97 cfs 1.206 af
21.2" Round Culvert n=0.010 L=177.0' S=0.1065 '/' Outflow=16.97 cfs 1.206 af

Pond C2C: (new Pond) Peak Elev=2,037.46' Inflow=7.55 cfs 0.618 af
15.9" Round Culvert n=0.010 L=317.0' S=0.1282 '/' Outflow=7.55 cfs 0.618 af

Pond C3B: (new Pond) Peak Elev=1,996.86' Inflow=8.00 cfs 0.606 af
21.1" Round Culvert n=0.010 L=150.0' S=0.0900 '/' Outflow=8.00 cfs 0.606 af

Pond C4B: (new Pond) Peak Elev=2,016.67' Inflow=10.09 cfs 0.641 af
21.2" Round Culvert n=0.010 L=164.0' S=0.0553 '/' Outflow=10.09 cfs 0.641 af

Pond C4C: (new Pond) Peak Elev=2,036.46' Inflow=4.50 cfs 0.319 af
21.2" Round Culvert n=0.010 L=479.0' S=0.0427 '/' Outflow=4.50 cfs 0.319 af

Pond C5B: (new Pond) Peak Elev=2,017.98' Inflow=12.66 cfs 0.876 af
21.2" Round Culvert n=0.010 L=105.0' S=0.0757 '/' Outflow=12.66 cfs 0.876 af

Pond C5C: (new Pond) Peak Elev=2,037.30' Inflow=7.09 cfs 0.543 af
15.9" Round Culvert n=0.010 L=184.0' S=0.1062 '/' Outflow=7.09 cfs 0.543 af

Pond C6B: (new Pond) Peak Elev=2,014.15' Inflow=12.93 cfs 0.783 af
21.2" Round Culvert n=0.010 L=102.0' S=0.0791 '/' Outflow=12.93 cfs 0.783 af

Pond C6C: (new Pond) Peak Elev=2,037.06' Inflow=6.28 cfs 0.420 af
15.9" Round Culvert n=0.010 L=202.0' S=0.1160 '/' Outflow=6.28 cfs 0.420 af

Pond C7B: (new Pond) Peak Elev=2,009.74' Inflow=9.00 cfs 0.478 af
21.2" Round Culvert n=0.010 L=115.0' S=0.0719 '/' Outflow=9.00 cfs 0.478 af

Pond C7C: (new Pond) Peak Elev=2,036.38' Inflow=3.12 cfs 0.161 af
15.9" Round Culvert n=0.010 L=253.0' S=0.1076 '/' Outflow=3.12 cfs 0.161 af

Pond C8B: (new Pond) Peak Elev=2,009.42' Inflow=4.25 cfs 0.232 af
15.9" Round Culvert n=0.010 L=146.0' S=0.0571 '/' Outflow=4.25 cfs 0.232 af

Pond MH1: Drop MH Peak Elev=1,988.76' Inflow=12.09 cfs 0.664 af
30.0" Round Culvert n=0.025 L=161.0' S=0.0000 '/' Outflow=12.09 cfs 0.664 af

Pond MH2: (new Pond) Peak Elev=1,955.97' Inflow=16.97 cfs 1.206 af
30.0" Round Culvert n=0.025 L=188.0' S=0.0000 '/' Outflow=16.97 cfs 1.206 af

Pond MH3: (new Pond) Peak Elev=1,956.29' Inflow=8.00 cfs 0.606 af
30.0" Round Culvert n=0.025 L=218.0' S=0.0000 '/' Outflow=8.00 cfs 0.606 af

Pond MH4: (new Pond) Peak Elev=1,998.34' Inflow=10.09 cfs 0.641 af
30.0" Round Culvert n=0.025 L=102.0' S=0.0000 '/' Outflow=10.09 cfs 0.641 af

Pond MH5: (new Pond) Peak Elev=1,985.14' Inflow=12.66 cfs 0.876 af
30.0" Round Culvert n=0.025 L=207.0' S=0.0000 '/' Outflow=12.66 cfs 0.876 af

Pond MH6: (new Pond) Peak Elev=1,977.53' Inflow=12.93 cfs 0.783 af
30.0" Round Culvert n=0.025 L=223.0' S=0.0000 '/' Outflow=12.93 cfs 0.783 af

Pond MH7: (new Pond) Peak Elev=1,980.32' Inflow=9.00 cfs 0.478 af
30.0" Round Culvert n=0.025 L=168.0' S=0.0000 '/' Outflow=9.00 cfs 0.478 af

Pond MH8: (new Pond) Peak Elev=1,987.48' Inflow=4.25 cfs 0.232 af
30.0" Round Culvert n=0.025 L=113.0' S=0.0000 '/' Outflow=4.25 cfs 0.232 af

Pond NWMH: (new Pond) Peak Elev=1,970.87' Inflow=3.34 cfs 4.402 af
18.0" Round Culvert n=0.025 L=24.0' S=0.0833 '/' Outflow=3.34 cfs 4.402 af

Pond SEMH: (new Pond) Peak Elev=1,925.82' Inflow=6.09 cfs 6.597 af
24.0" Round Culvert n=0.025 L=71.0' S=0.0000 '/' Outflow=6.09 cfs 6.597 af

Total Runoff Area = 97.739 ac Runoff Volume = 12.466 af Average Runoff Depth = 1.53"
100.00% Pervious = 97.739 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1A: (new Subcat)

Runoff = 8.85 cfs @ 12.13 hrs, Volume= 0.524 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
178,847	74	>75% Grass cover, Good, HSG C
178,847		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	261	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 1B: (new Subcat)

Runoff = 6.27 cfs @ 12.09 hrs, Volume= 0.328 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
111,895	74	>75% Grass cover, Good, HSG C
111,895		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	187	0.1500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 1C: (new Subcat)

Runoff = 7.52 cfs @ 12.05 hrs, Volume= 0.336 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
114,791	74	>75% Grass cover, Good, HSG C
114,791		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	51	0.0500	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	178	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.0	229	Total			

Summary for Subcatchment 2A: (new Subcat)

Runoff = 13.90 cfs @ 12.14 hrs, Volume= 0.872 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
297,718	74	>75% Grass cover, Good, HSG C
297,718		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 2B: (new Subcat)

Runoff = 9.92 cfs @ 12.13 hrs, Volume= 0.588 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
200,643	74	>75% Grass cover, Good, HSG C
200,643		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	260	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 2C: (new Subcat)

Runoff = 10.66 cfs @ 12.12 hrs, Volume= 0.618 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
211,164	74	>75% Grass cover, Good, HSG C
211,164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	123	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	173	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.1	296	Total			

Summary for Subcatchment 3A: (new Subcat)

Runoff = 3.15 cfs @ 12.14 hrs, Volume= 0.198 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
67,565	74	>75% Grass cover, Good, HSG C
67,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 3B: (new Subcat)

Runoff = 9.84 cfs @ 12.14 hrs, Volume= 0.606 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
206,873	74	>75% Grass cover, Good, HSG C
206,873		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	292	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 4A: (new Subcat)

Runoff = 15.86 cfs @ 12.14 hrs, Volume= 0.995 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
339,762	74	>75% Grass cover, Good, HSG C
339,762		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 4B: (new Subcat)

Runoff = 6.46 cfs @ 12.07 hrs, Volume= 0.321 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
109,746	74	>75% Grass cover, Good, HSG C
109,746		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	153	0.1500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 4C: (new Subcat)

Runoff = 6.06 cfs @ 12.09 hrs, Volume= 0.319 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
109,094	74	>75% Grass cover, Good, HSG C
109,094		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	95	0.0500	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	173	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	268	Total			

Summary for Subcatchment 5A: (new Subcat)

Runoff = 2.18 cfs @ 12.14 hrs, Volume= 0.137 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
46,695	74	>75% Grass cover, Good, HSG C
46,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 5B: (new Subcat)

Runoff = 6.74 cfs @ 12.07 hrs, Volume= 0.333 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
113,626	74	>75% Grass cover, Good, HSG C
113,626		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	149	0.1500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 5C: (new Subcat)

Runoff = 9.36 cfs @ 12.12 hrs, Volume= 0.543 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
185,512	74	>75% Grass cover, Good, HSG C
185,512		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	123	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	173	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.1	296	Total			

Summary for Subcatchment 6A: (new Subcat)

Runoff = 17.99 cfs @ 12.14 hrs, Volume= 1.129 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
385,422	74	>75% Grass cover, Good, HSG C
385,422		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 6B: (new Subcat)

Runoff = 7.25 cfs @ 12.07 hrs, Volume= 0.363 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
124,047	74	>75% Grass cover, Good, HSG C
124,047		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	156	0.1500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 6C: (new Subcat)

Runoff = 7.76 cfs @ 12.09 hrs, Volume= 0.420 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
143,402	74	>75% Grass cover, Good, HSG C
143,402		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	102	0.0500	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	178	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.7	280	Total			

Summary for Subcatchment 7A: (new Subcat)

Runoff = 15.26 cfs @ 12.13 hrs, Volume= 0.906 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
309,322	74	>75% Grass cover, Good, HSG C
309,322		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	262	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 7B: (new Subcat)

Runoff = 5.92 cfs @ 12.09 hrs, Volume= 0.317 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
108,115	74	>75% Grass cover, Good, HSG C
108,115		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	199	0.1500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 7C: (new Subcat)

Runoff = 3.16 cfs @ 12.08 hrs, Volume= 0.161 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
55,104	74	>75% Grass cover, Good, HSG C
55,104		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	170	0.1500	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 8A: (new Subcat)

Runoff = 5.52 cfs @ 12.14 hrs, Volume= 0.346 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
118,254	74	>75% Grass cover, Good, HSG C
118,254		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 8B: (new Subcat)

Runoff = 4.33 cfs @ 12.09 hrs, Volume= 0.232 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
79,083	74	>75% Grass cover, Good, HSG C
79,083		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	199	0.1500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 9A: (new Subcat)

Runoff = 18.01 cfs @ 12.14 hrs, Volume= 1.130 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
385,759	74	>75% Grass cover, Good, HSG C
385,759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 10A: (new Subcat)

Runoff = 3.90 cfs @ 12.14 hrs, Volume= 0.243 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
83,070	74	>75% Grass cover, Good, HSG C
83,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	296	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 11A: (new Subcat)

Runoff = 8.68 cfs @ 12.12 hrs, Volume= 0.504 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 25-yr Rainfall=3.91"

Area (sf)	CN	Description
172,006	74	>75% Grass cover, Good, HSG C
172,006		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	245	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

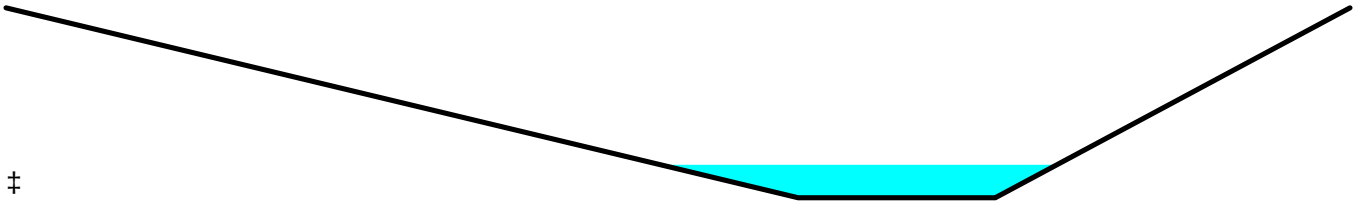
Summary for Reach 1R: (new Reach)

Inflow Area = 4.106 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 8.85 cfs @ 12.13 hrs, Volume= 0.524 af
Outflow = 7.49 cfs @ 12.20 hrs, Volume= 0.524 af, Atten= 15%, Lag= 4.4 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 1.91 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 19.5 min

Peak Storage= 2,571 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 300.24 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 657.0' Slope= 0.0053 '/'
Inlet Invert= 1,985.50', Outlet Invert= 1,982.00'



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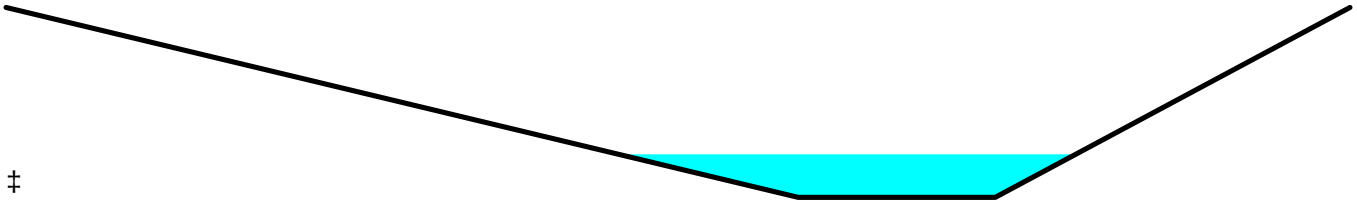
Summary for Reach 2R: (new Reach)

Inflow Area = 16.144 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 31.87 cfs @ 12.14 hrs, Volume= 2.059 af
Outflow = 30.61 cfs @ 12.18 hrs, Volume= 2.059 af, Atten= 4%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 5.40 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 10.0 min

Peak Storage= 5,350 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 732.53 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 946.0' Slope= 0.0317 '/'
Inlet Invert= 1,982.00', Outlet Invert= 1,952.00'



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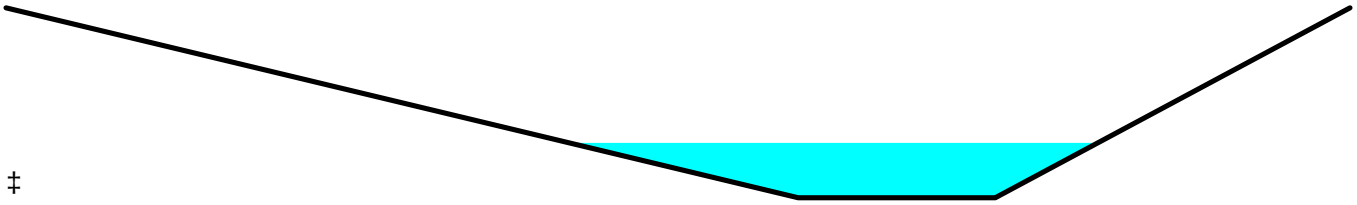
Summary for Reach 3R: (new Reach)

Inflow Area = 27.149 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 50.45 cfs @ 12.17 hrs, Volume= 3.463 af
Outflow = 50.42 cfs @ 12.17 hrs, Volume= 3.463 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 6.31 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 1.6 min

Peak Storage= 1,445 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 748.94 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 181.0' Slope= 0.0331 '/'
Inlet Invert= 1,952.00', Outlet Invert= 1,946.00'



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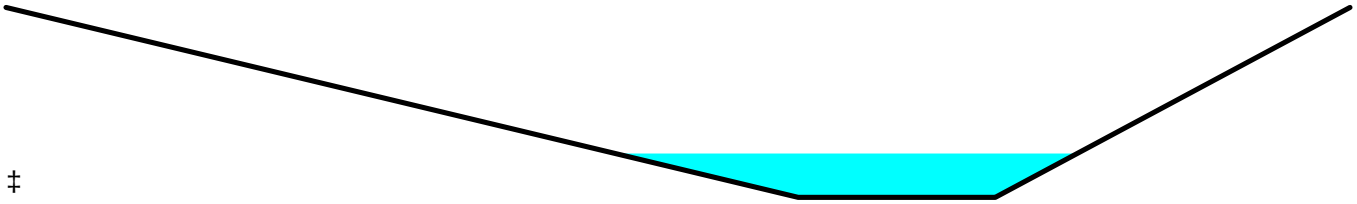
Summary for Reach 4R: (new Reach)

Inflow Area = 19.693 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 35.24 cfs @ 12.19 hrs, Volume= 2.512 af
Outflow = 35.24 cfs @ 12.20 hrs, Volume= 2.512 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 6.10 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 1.8 min

Peak Storage= 1,167 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 818.62 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 202.0' Slope= 0.0396 '/'
Inlet Invert= 1,954.00', Outlet Invert= 1,946.00'



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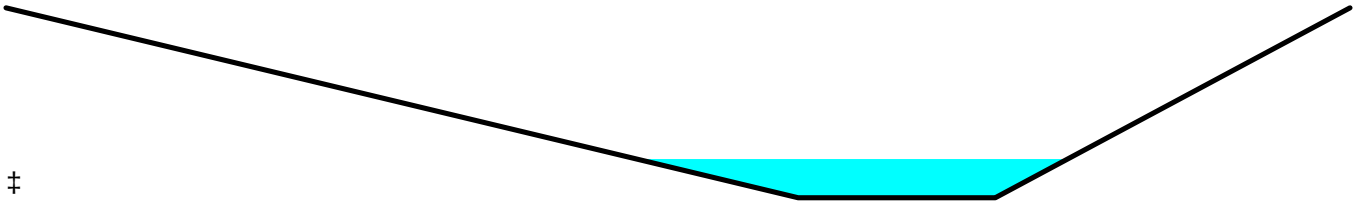
Summary for Reach 5R: (new Reach)

Inflow Area = 13.872 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 27.51 cfs @ 12.13 hrs, Volume= 1.769 af
Outflow = 25.31 cfs @ 12.19 hrs, Volume= 1.769 af, Atten= 8%, Lag= 3.5 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 5.19 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 13.7 min

Peak Storage= 6,242 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 745.73 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 1,281.0' Slope= 0.0329 '/'
Inlet Invert= 1,996.10', Outlet Invert= 1,954.00'



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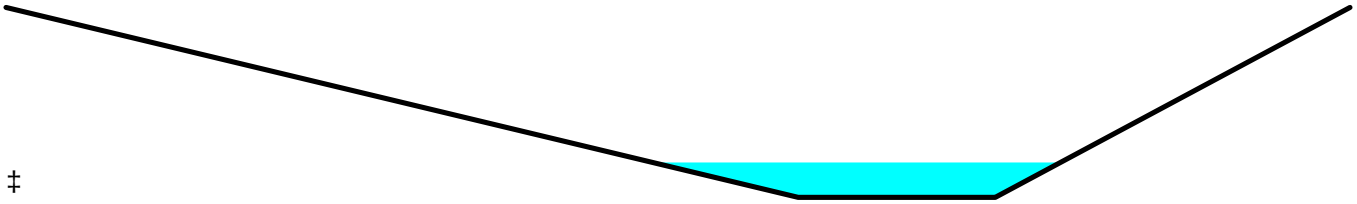
Summary for Reach 6R: (new Reach)

Inflow Area = 7.101 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 15.26 cfs @ 12.13 hrs, Volume= 0.906 af
Outflow = 12.32 cfs @ 12.21 hrs, Volume= 0.906 af, Atten= 19%, Lag= 5.2 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 2.91 fps, Min. Travel Time= 7.0 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 24.0 min

Peak Storage= 5,169 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 442.04 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 1,221.0' Slope= 0.0115 '/'
Inlet Invert= 1,996.10', Outlet Invert= 1,982.00'



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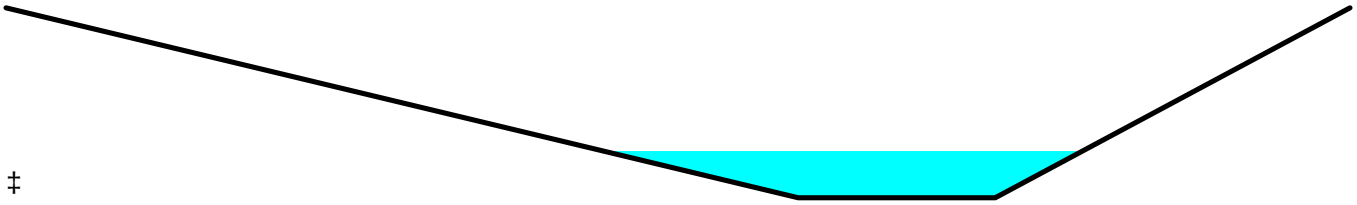
Summary for Reach 7R: (new Reach)

Inflow Area = 16.683 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 28.63 cfs @ 12.17 hrs, Volume= 2.128 af
Outflow = 28.50 cfs @ 12.19 hrs, Volume= 2.128 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 4.49 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.32 fps, Avg. Travel Time= 3.8 min

Peak Storage= 1,902 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 581.74 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 300.0' Slope= 0.0200 '/'
Inlet Invert= 1,982.00', Outlet Invert= 1,976.00'



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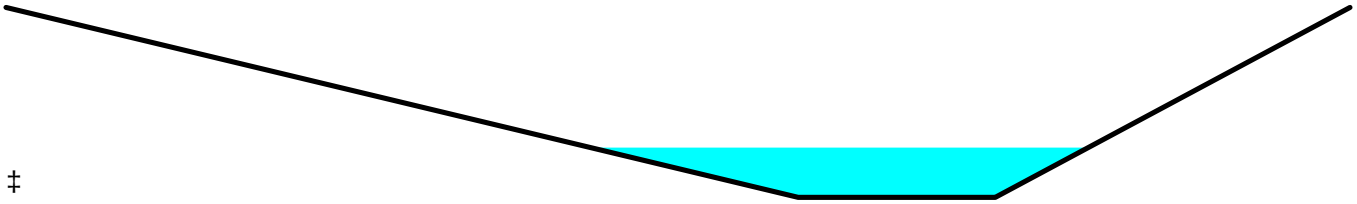
Summary for Reach 8R: (new Reach)

Inflow Area = 11.418 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 22.96 cfs @ 12.14 hrs, Volume= 1.456 af
Outflow = 22.75 cfs @ 12.15 hrs, Volume= 1.456 af, Atten= 1%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 3.29 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.96 fps, Avg. Travel Time= 3.5 min

Peak Storage= 1,384 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 411.35 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 200.0' Slope= 0.0100 '/'
Inlet Invert= 1,978.00', Outlet Invert= 1,976.00'



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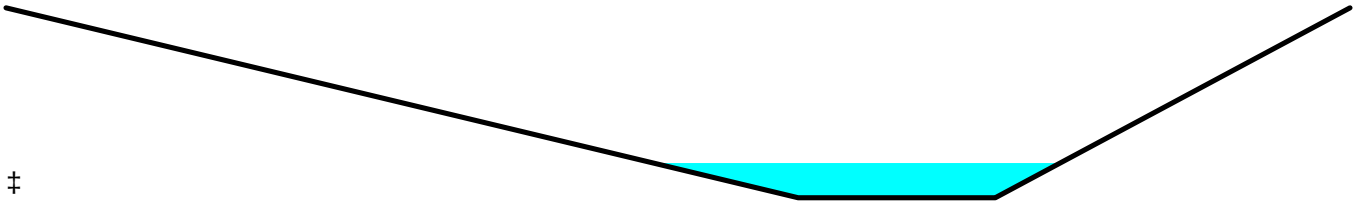
Summary for Reach 9R: (new Reach)

Inflow Area = 5.764 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.90 cfs @ 12.11 hrs, Volume= 0.735 af
Outflow = 11.33 cfs @ 12.17 hrs, Volume= 0.735 af, Atten= 12%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 2.69 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 15.9 min

Peak Storage= 3,149 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 411.35 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 750.0' Slope= 0.0100 '/'
Inlet Invert= 1,985.50', Outlet Invert= 1,978.00'



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Summary for Pond 7P: SE Pond

Inflow Area = 54.642 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 100.86 cfs @ 12.18 hrs, Volume= 6.970 af
Outflow = 6.09 cfs @ 13.80 hrs, Volume= 6.597 af, Atten= 94%, Lag= 97.2 min
Primary = 6.09 cfs @ 13.80 hrs, Volume= 6.597 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Starting Elev= 1,938.00' Surf.Area= 49,820 sf Storage= 159,935 cf
Peak Elev= 1,941.09' @ 13.80 hrs Surf.Area= 66,185 sf Storage= 338,926 cf (178,991 cf above start)
Flood Elev= 1,944.00' Surf.Area= 82,507 sf Storage= 555,034 cf (395,099 cf above start)

Plug-Flow detention time= 760.1 min calculated for 2.926 af (42% of inflow)
Center-of-Mass det. time= 352.8 min (1,194.8 - 841.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,934.00'	555,034 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,934.00	30,383	0	0
1,936.00	39,866	70,249	70,249
1,938.00	49,820	89,686	159,935
1,940.00	60,245	110,065	270,000
1,942.00	71,141	131,386	401,386
1,944.00	82,507	153,648	555,034

Device	Routing	Invert	Outlet Devices
#1	Primary	1,938.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=6.09 cfs @ 13.80 hrs HW=1,941.09' TW=1,925.82' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 6.09 cfs @ 7.75 fps)

Summary for Pond 8P: NW Pond

Inflow Area = 43.097 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 80.35 cfs @ 12.15 hrs, Volume= 5.497 af
Outflow = 3.34 cfs @ 14.72 hrs, Volume= 4.402 af, Atten= 96%, Lag= 154.0 min
Primary = 3.34 cfs @ 14.72 hrs, Volume= 4.402 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Starting Elev= 1,970.00' Surf.Area= 86,032 sf Storage= 373,558 cf
Peak Elev= 1,971.65' @ 14.72 hrs Surf.Area= 99,681 sf Storage= 526,536 cf (152,978 cf above start)
Flood Elev= 1,974.00' Surf.Area= 119,637 sf Storage= 784,431 cf (410,873 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 439.1 min (1,279.6 - 840.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,964.00'	784,431 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,964.00	39,106	0	0
1,966.00	54,284	93,390	93,390
1,968.00	69,926	124,210	217,600
1,970.00	86,032	155,958	373,558
1,972.00	102,602	188,634	562,192
1,974.00	119,637	222,239	784,431

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.34 cfs @ 14.72 hrs HW=1,971.65' TW=1,970.87' (Dynamic Tailwater)
1=Orifice/Grate (Orifice Controls 3.34 cfs @ 4.26 fps)

Summary for Pond B1B: (new Pond)

Inflow Area = 2.569 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.27 cfs @ 12.09 hrs, Volume= 0.328 af
Outflow = 6.10 cfs @ 12.10 hrs, Volume= 0.328 af, Atten= 3%, Lag= 0.9 min
Primary = 6.10 cfs @ 12.10 hrs, Volume= 0.328 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,016.57' @ 12.10 hrs Surf.Area= 1,058 sf Storage= 243 cf
Flood Elev= 2,019.11' Surf.Area= 10,868 sf Storage= 12,560 cf

Plug-Flow detention time= 0.4 min calculated for 0.327 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (833.8 - 833.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,016.11'	12,560 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,016.11	5	0	0
2,018.00	4,349	4,115	4,115
2,019.11	10,868	8,445	12,560

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.11'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.99 cfs @ 12.10 hrs HW=2,016.56' TW=2,013.50' (Dynamic Tailwater)
1=Orifice/Grate (Weir Controls 5.99 cfs @ 2.20 fps)

Summary for Pond B1C: (new Pond)

Inflow Area = 2.635 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.52 cfs @ 12.05 hrs, Volume= 0.336 af
Outflow = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af, Atten= 21%, Lag= 3.0 min
Primary = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,040.80' @ 12.10 hrs Surf.Area= 1,725 sf Storage= 692 cf
Flood Elev= 2,043.00' Surf.Area= 9,630 sf Storage= 11,278 cf

Plug-Flow detention time= 0.8 min calculated for 0.336 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (831.4 - 830.7)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	11,278 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,305	4,310	4,310
2,043.00	9,630	6,968	11,278

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.88 cfs @ 12.10 hrs HW=2,040.78' TW=2,036.95' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 5.88 cfs @ 4.26 fps)

Summary for Pond B2B: (new Pond)

Inflow Area = 4.606 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.92 cfs @ 12.13 hrs, Volume= 0.588 af
Outflow = 9.86 cfs @ 12.13 hrs, Volume= 0.588 af, Atten= 1%, Lag= 0.5 min
Primary = 9.86 cfs @ 12.13 hrs, Volume= 0.588 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,000.04' @ 12.13 hrs Surf.Area= 357 sf Storage= 102 cf
Flood Elev= 2,002.35' Surf.Area= 5,788 sf Storage= 6,646 cf

Plug-Flow detention time= 0.1 min calculated for 0.587 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (836.0 - 835.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,999.35'	6,646 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,999.35	5	0	0
2,000.00	270	89	89
2,002.00	4,488	4,758	4,847
2,002.35	5,788	1,798	6,646

Device	Routing	Invert	Outlet Devices
#1	Primary	1,999.35'	**21.2" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.73 cfs @ 12.13 hrs HW=2,000.03' TW=1,997.74' (Dynamic Tailwater)
↳**1=Orifice/Grate** (Orifice Controls 9.73 cfs @ 3.97 fps)

Summary for Pond B2C: (new Pond)

Inflow Area = 4.848 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 10.66 cfs @ 12.12 hrs, Volume= 0.618 af
Outflow = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af, Atten= 29%, Lag= 6.7 min
Primary = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,041.29' @ 12.23 hrs Surf.Area= 3,442 sf Storage= 2,228 cf
Flood Elev= 2,043.00' Surf.Area= 11,914 sf Storage= 13,942 cf

Plug-Flow detention time= 1.9 min calculated for 0.618 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (837.3 - 835.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	13,942 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	5,320	5,325	5,325
2,043.00	11,914	8,617	13,942

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.54 cfs @ 12.23 hrs HW=2,041.29' TW=2,037.45' (Dynamic Tailwater)
↳**1=Orifice/Grate** (Orifice Controls 7.54 cfs @ 5.47 fps)

Summary for Pond B3B: (new Pond)

Inflow Area = 4.749 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.84 cfs @ 12.14 hrs, Volume= 0.606 af
Outflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af, Atten= 19%, Lag= 5.3 min
Primary = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,001.45' @ 12.23 hrs Surf.Area= 1,881 sf Storage= 1,368 cf
Flood Elev= 2,003.00' Surf.Area= 5,648 sf Storage= 6,717 cf

Plug-Flow detention time= 1.0 min calculated for 0.605 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (838.0 - 837.0)

Volume	Invert	Avail.Storage	Storage Description
#1	2,000.00'	6,717 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,000.00	5	0	0
2,002.00	2,592	2,597	2,597
2,003.00	5,648	4,120	6,717

Device	Routing	Invert	Outlet Devices
#1	Primary	2,000.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.97 cfs @ 12.23 hrs HW=2,001.44' TW=1,996.86' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 7.97 cfs @ 5.78 fps)

Summary for Pond B4B: (new Pond)

Inflow Area = 2.519 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.46 cfs @ 12.07 hrs, Volume= 0.321 af
Outflow = 6.46 cfs @ 12.07 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.3 min
Primary = 6.46 cfs @ 12.07 hrs, Volume= 0.321 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,020.05' @ 12.07 hrs Surf.Area= 395 sf Storage= 66 cf
Flood Elev= 2,022.57' Surf.Area= 11,249 sf Storage= 12,883 cf

Plug-Flow detention time= 0.1 min calculated for 0.321 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (832.2 - 832.1)

Volume	Invert	Avail.Storage	Storage Description
#1	2,019.57'	12,883 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,019.57	5	0	0
2,020.00	233	51	51
2,022.00	7,310	7,543	7,594
2,022.57	11,249	5,289	12,883

Device	Routing	Invert	Outlet Devices
#1	Primary	2,019.57'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.36 cfs @ 12.07 hrs HW=2,020.04' TW=2,016.63' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 6.36 cfs @ 2.24 fps)

Summary for Pond B4C: (new Pond)

Inflow Area = 2.504 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.06 cfs @ 12.09 hrs, Volume= 0.319 af
Outflow = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af, Atten= 26%, Lag= 5.2 min
Primary = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,041.12' @ 12.17 hrs Surf.Area= 2,613 sf Storage= 1,471 cf
Flood Elev= 2,043.00' Surf.Area= 10,437 sf Storage= 12,194 cf

Plug-Flow detention time= 4.5 min calculated for 0.319 af (100% of inflow)
Center-of-Mass det. time= 4.5 min (838.1 - 833.6)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	12,194 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,647	4,652	4,652
2,043.00	10,437	7,542	12,194

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.47 cfs @ 12.17 hrs HW=2,041.12' TW=2,036.45' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 4.47 cfs @ 3.60 fps)

Summary for Pond B5B: (new Pond)

Inflow Area = 2.608 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.74 cfs @ 12.07 hrs, Volume= 0.333 af
Outflow = 6.71 cfs @ 12.08 hrs, Volume= 0.333 af, Atten= 0%, Lag= 1.0 min
Primary = 6.71 cfs @ 12.08 hrs, Volume= 0.333 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,020.94' @ 12.08 hrs Surf.Area= 1,007 sf Storage= 247 cf
Flood Elev= 2,023.45' Surf.Area= 11,886 sf Storage= 13,400 cf

Plug-Flow detention time= 0.4 min calculated for 0.332 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (832.4 - 832.0)

Volume	Invert	Avail.Storage	Storage Description
#1	2,020.45'	13,400 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,020.45	5	0	0
2,022.00	3,186	2,473	2,473
2,023.45	11,886	10,927	13,400

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.45'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.69 cfs @ 12.08 hrs HW=2,020.94' TW=2,017.95' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 6.69 cfs @ 2.28 fps)

Summary for Pond B5C: (new Pond)

Inflow Area = 4.259 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.36 cfs @ 12.12 hrs, Volume= 0.543 af
Outflow = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af, Atten= 24%, Lag= 5.7 min
Primary = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,041.14' @ 12.21 hrs Surf.Area= 2,830 sf Storage= 1,614 cf
Flood Elev= 2,043.00' Surf.Area= 11,094 sf Storage= 13,001 cf

Plug-Flow detention time= 1.5 min calculated for 0.543 af (100% of inflow)
Center-of-Mass det. time= 1.5 min (836.9 - 835.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	13,001 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,966	4,971	4,971
2,043.00	11,094	8,030	13,001

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.06 cfs @ 12.21 hrs HW=2,041.13' TW=2,037.29' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 7.06 cfs @ 5.12 fps)

Summary for Pond B6B: (new Pond)

Inflow Area = 2.848 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.25 cfs @ 12.07 hrs, Volume= 0.363 af
Outflow = 7.25 cfs @ 12.08 hrs, Volume= 0.363 af, Atten= 0%, Lag= 0.6 min
Primary = 7.25 cfs @ 12.08 hrs, Volume= 0.363 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3

Peak Elev= 2,017.08' @ 12.08 hrs Surf.Area= 735 sf Storage= 190 cf
Flood Elev= 2,019.57' Surf.Area= 8,958 sf Storage= 10,093 cf

Plug-Flow detention time= 0.3 min calculated for 0.363 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (832.6 - 832.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,016.57'	10,093 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,016.57	5	0	0
2,018.00	2,038	1,461	1,461
2,019.57	8,958	8,632	10,093

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.57'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.21 cfs @ 12.08 hrs HW=2,017.08' TW=2,014.13' (Dynamic Tailwater)
1=Orifice/Grate (Weir Controls 7.21 cfs @ 2.34 fps)

Summary for Pond B6C: (new Pond)

Inflow Area = 3.292 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.76 cfs @ 12.09 hrs, Volume= 0.420 af
Outflow = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af, Atten= 19%, Lag= 4.3 min
Primary = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,040.89' @ 12.17 hrs Surf.Area= 2,026 sf Storage= 908 cf
Flood Elev= 2,043.00' Surf.Area= 10,157 sf Storage= 11,874 cf

Plug-Flow detention time= 1.0 min calculated for 0.419 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (835.1 - 834.1)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	11,874 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,527	4,532	4,532
2,043.00	10,157	7,342	11,874

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.26 cfs @ 12.17 hrs HW=2,040.89' TW=2,037.05' (Dynamic Tailwater)
1=Orifice/Grate (Orifice Controls 6.26 cfs @ 4.54 fps)

Summary for Pond B7B: (new Pond)

Inflow Area = 2.482 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 5.92 cfs @ 12.09 hrs, Volume= 0.317 af
Outflow = 5.89 cfs @ 12.10 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.4 min
Primary = 5.89 cfs @ 12.10 hrs, Volume= 0.317 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,013.22' @ 12.10 hrs Surf.Area= 491 sf Storage= 111 cf
Flood Elev= 2,015.77' Surf.Area= 7,413 sf Storage= 8,577 cf

Plug-Flow detention time= 0.2 min calculated for 0.316 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (834.0 - 833.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,012.77'	8,577 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,012.77	5	0	0
2,014.00	1,342	828	828
2,015.77	7,413	7,748	8,577

Device	Routing	Invert	Outlet Devices
#1	Primary	2,012.77'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.73 cfs @ 12.10 hrs HW=2,013.21' TW=2,009.71' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 5.73 cfs @ 2.17 fps)

Summary for Pond B7C: (new Pond)

Inflow Area = 1.265 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 3.16 cfs @ 12.08 hrs, Volume= 0.161 af
Outflow = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af, Atten= 1%, Lag= 0.8 min
Primary = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,040.37' @ 12.09 hrs Surf.Area= 652 sf Storage= 123 cf
Flood Elev= 2,043.00' Surf.Area= 7,824 sf Storage= 9,109 cf

Plug-Flow detention time= 0.4 min calculated for 0.161 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (833.2 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	9,109 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	3,461	3,466	3,466
2,043.00	7,824	5,643	9,109

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.04 cfs @ 12.09 hrs HW=2,040.37' TW=2,036.37' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 3.04 cfs @ 1.98 fps)

Summary for Pond B8B: (new Pond)

Inflow Area = 1.815 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 4.33 cfs @ 12.09 hrs, Volume= 0.232 af
Outflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af, Atten= 2%, Lag= 0.6 min
Primary = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,013.30' @ 12.10 hrs Surf.Area= 463 sf Storage= 108 cf
Flood Elev= 2,015.84' Surf.Area= 7,724 sf Storage= 8,846 cf

Plug-Flow detention time= 0.3 min calculated for 0.231 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (834.1 - 833.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,012.84'	8,846 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,012.84	5	0	0
2,014.00	1,158	675	675
2,015.84	7,724	8,171	8,846

Device	Routing	Invert	Outlet Devices
#1	Primary	2,012.84'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.18 cfs @ 12.10 hrs HW=2,013.30' TW=2,009.41' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 4.18 cfs @ 2.21 fps)

Summary for Pond C1B: (new Pond)

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af
Outflow = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min
Primary = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3

Peak Elev= 2,013.54' @ 12.10 hrs
Flood Elev= 2,016.11'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,011.61'	**21.2" Round Culvert** L= 104.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,011.61' / 2,002.00' S= 0.0924 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=11.86 cfs @ 12.10 hrs HW=2,013.50' TW=1,988.72' (Dynamic Tailwater)
1=Culvert (Inlet Controls 11.86 cfs @ 4.84 fps)

Summary for Pond C1C: (new Pond)

Inflow Area = 2.635 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af
Outflow = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af, Atten= 0%, Lag= 0.0 min
Primary = 5.94 cfs @ 12.10 hrs, Volume= 0.336 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,036.96' @ 12.10 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 205.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,011.61' S= 0.1165 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=5.88 cfs @ 12.10 hrs HW=2,036.95' TW=2,013.50' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.88 cfs @ 4.26 fps)

Summary for Pond C2B: (new Pond)

Inflow Area = 9.454 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af
Outflow = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af, Atten= 0%, Lag= 0.0 min
Primary = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,997.80' @ 12.15 hrs
Flood Elev= 1,999.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,994.85'	**21.2" Round Culvert** L= 177.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,994.85' / 1,976.00' S= 0.1065 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=16.82 cfs @ 12.15 hrs HW=1,997.76' TW=1,955.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 16.82 cfs @ 6.86 fps)

Summary for Pond C2C: (new Pond)

Inflow Area = 4.848 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af
Outflow = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af, Atten= 0%, Lag= 0.0 min
Primary = 7.55 cfs @ 12.23 hrs, Volume= 0.618 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,037.46' @ 12.23 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 317.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 1,994.85' S= 0.1282 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=7.54 cfs @ 12.23 hrs HW=2,037.45' TW=1,997.34' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 7.54 cfs @ 5.47 fps)

Summary for Pond C3B: (new Pond)

Inflow Area = 4.749 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af
Outflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.0 min
Primary = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,996.86' @ 12.23 hrs
Flood Elev= 2,000.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,995.50'	**21.1" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,995.50' / 1,982.00' S= 0.0900 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.43 sf

Primary OutFlow Max=7.97 cfs @ 12.23 hrs HW=1,996.86' TW=1,956.29' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 7.97 cfs @ 3.97 fps)

Summary for Pond C4B: (new Pond)

Inflow Area = 5.024 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af
Outflow = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af, Atten= 0%, Lag= 0.0 min
Primary = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,016.67' @ 12.09 hrs
Flood Elev= 2,019.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,015.07'	**21.2" Round Culvert** L= 164.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,015.07' / 2,006.00' S= 0.0553 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=9.89 cfs @ 12.09 hrs HW=2,016.65' TW=1,998.31' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 9.89 cfs @ 4.28 fps)

Summary for Pond C4C: (new Pond)

Inflow Area = 2.504 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af
Outflow = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.0 min
Primary = 4.50 cfs @ 12.17 hrs, Volume= 0.319 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,036.46' @ 12.17 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**21.2" Round Culvert** L= 479.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,015.07' S= 0.0427 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=4.47 cfs @ 12.17 hrs HW=2,036.45' TW=2,016.49' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.47 cfs @ 3.32 fps)

Summary for Pond C5B: (new Pond)

Inflow Area = 6.867 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af
Outflow = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af, Atten= 0%, Lag= 0.0 min
Primary = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,017.98' @ 12.10 hrs
Flood Elev= 2,020.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,015.95'	**21.2" Round Culvert** L= 105.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,015.95' / 2,008.00' S= 0.0757 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=12.44 cfs @ 12.10 hrs HW=2,017.94' TW=1,985.09' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 12.44 cfs @ 5.07 fps)

Summary for Pond C5C: (new Pond)

Inflow Area = 4.259 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af
Outflow = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af, Atten= 0%, Lag= 0.0 min
Primary = 7.09 cfs @ 12.21 hrs, Volume= 0.543 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,037.30' @ 12.21 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 184.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,015.95' S= 0.1062 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=7.06 cfs @ 12.21 hrs HW=2,037.29' TW=2,017.64' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 7.06 cfs @ 5.12 fps)

Summary for Pond C6B: (new Pond)

Inflow Area = 6.140 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af
Outflow = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af, Atten= 0%, Lag= 0.0 min
Primary = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,014.15' @ 12.09 hrs
Flood Elev= 2,016.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,012.07'	**21.2" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,012.07' / 2,004.00' S= 0.0791 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=12.70 cfs @ 12.09 hrs HW=2,014.11' TW=1,977.45' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 12.70 cfs @ 5.18 fps)

Summary for Pond C6C: (new Pond)

Inflow Area = 3.292 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af
Outflow = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af, Atten= 0%, Lag= 0.0 min
Primary = 6.28 cfs @ 12.17 hrs, Volume= 0.420 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,037.06' @ 12.17 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 202.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,012.07' S= 0.1160 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=6.26 cfs @ 12.17 hrs HW=2,037.05' TW=2,013.87' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.26 cfs @ 4.54 fps)

Summary for Pond C7B: (new Pond)

Inflow Area = 3.747 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af
Outflow = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min
Primary = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,009.74' @ 12.10 hrs
Flood Elev= 2,012.77'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,008.27'	**21.2" Round Culvert** L= 115.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,008.27' / 2,000.00' S= 0.0719 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=8.76 cfs @ 12.10 hrs HW=2,009.71' TW=1,980.28' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.76 cfs @ 4.09 fps)

Summary for Pond C7C: (new Pond)

Inflow Area = 1.265 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af
Outflow = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min
Primary = 3.12 cfs @ 12.09 hrs, Volume= 0.161 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,036.38' @ 12.09 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,008.27' S= 0.1076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=3.04 cfs @ 12.09 hrs HW=2,036.37' TW=2,009.71' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.04 cfs @ 3.17 fps)

Summary for Pond C8B: (new Pond)

Inflow Area = 1.815 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af
Outflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Primary = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,009.42' @ 12.10 hrs
Flood Elev= 2,012.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,008.34'	**15.9" Round Culvert** L= 146.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,008.34' / 2,000.00' S= 0.0571 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=4.18 cfs @ 12.10 hrs HW=2,009.41' TW=1,987.47' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.18 cfs @ 3.52 fps)

Summary for Pond MH1: Drop MH

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af
Outflow = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min
Primary = 12.09 cfs @ 12.10 hrs, Volume= 0.664 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,988.76' @ 12.10 hrs
Flood Elev= 2,007.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,986.00'	**30.0" Round Culvert** L= 161.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,986.00' / 1,986.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=11.86 cfs @ 12.10 hrs HW=1,988.72' TW=1,982.60' (Dynamic Tailwater)
1=Culvert (Barrel Controls 11.86 cfs @ 2.76 fps)

Summary for Pond MH2: (new Pond)

Inflow Area = 9.454 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af
Outflow = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af, Atten= 0%, Lag= 0.0 min
Primary = 16.97 cfs @ 12.15 hrs, Volume= 1.206 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,955.97' @ 12.15 hrs
Flood Elev= 1,980.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,952.00'	**30.0" Round Culvert** L= 188.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,952.00' / 1,952.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=16.82 cfs @ 12.15 hrs HW=1,955.95' TW=1,952.85' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 16.82 cfs @ 3.43 fps)

Summary for Pond MH3: (new Pond)

Inflow Area = 4.749 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af
Outflow = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.0 min
Primary = 8.00 cfs @ 12.23 hrs, Volume= 0.606 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,956.29' @ 12.23 hrs
Flood Elev= 1,986.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,954.00'	**30.0" Round Culvert** L= 218.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,954.00' / 1,954.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=7.97 cfs @ 12.23 hrs HW=1,956.29' TW=1,954.68' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 7.97 cfs @ 2.22 fps)

Summary for Pond MH4: (new Pond)

Inflow Area = 5.024 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af
Outflow = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af, Atten= 0%, Lag= 0.0 min
Primary = 10.09 cfs @ 12.09 hrs, Volume= 0.641 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,998.34' @ 12.09 hrs
Flood Elev= 2,010.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,996.10'	**30.0" Round Culvert** L= 102.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,996.10' / 1,996.10' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=9.89 cfs @ 12.09 hrs HW=1,998.31' TW=1,996.62' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 9.89 cfs @ 2.86 fps)

Summary for Pond MH5: (new Pond)

Inflow Area = 6.867 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af
Outflow = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af, Atten= 0%, Lag= 0.0 min
Primary = 12.66 cfs @ 12.10 hrs, Volume= 0.876 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,985.14' @ 12.10 hrs
Flood Elev= 2,012.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,982.00'	**30.0" Round Culvert** L= 207.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,982.00' / 1,982.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=12.44 cfs @ 12.10 hrs HW=1,985.09' TW=1,982.67' (Dynamic Tailwater)
1=Culvert (Barrel Controls 12.44 cfs @ 2.62 fps)

Summary for Pond MH6: (new Pond)

Inflow Area = 6.140 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af
Outflow = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af, Atten= 0%, Lag= 0.0 min
Primary = 12.93 cfs @ 12.09 hrs, Volume= 0.783 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,977.53' @ 12.10 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,974.00'	**30.0" Round Culvert** L= 223.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,974.00' / 1,974.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=12.70 cfs @ 12.09 hrs HW=1,977.45' TW=1,970.36' (Dynamic Tailwater)
1=Culvert (Barrel Controls 12.70 cfs @ 2.59 fps)

Summary for Pond MH7: (new Pond)

Inflow Area = 3.747 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af
Outflow = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min
Primary = 9.00 cfs @ 12.10 hrs, Volume= 0.478 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,980.32' @ 12.10 hrs
Flood Elev= 2,004.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,978.00'	**30.0" Round Culvert** L= 168.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,978.00' / 1,978.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=8.76 cfs @ 12.10 hrs HW=1,980.28' TW=1,978.73' (Dynamic Tailwater)
1=Culvert (Barrel Controls 8.76 cfs @ 2.45 fps)

Summary for Pond MH8: (new Pond)

Inflow Area = 1.815 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-yr event
Inflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af
Outflow = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Primary = 4.25 cfs @ 12.10 hrs, Volume= 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,987.48' @ 12.10 hrs
Flood Elev= 2,004.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,986.00'	**30.0" Round Culvert** L= 113.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,986.00' / 1,986.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=4.18 cfs @ 12.10 hrs HW=1,987.47' TW=1,985.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.18 cfs @ 2.01 fps)

Summary for Pond NWMH: (new Pond)

Inflow Area = 43.097 ac, 0.00% Impervious, Inflow Depth > 1.23" for 25-yr event
Inflow = 3.34 cfs @ 14.72 hrs, Volume= 4.402 af
Outflow = 3.34 cfs @ 14.72 hrs, Volume= 4.402 af, Atten= 0%, Lag= 0.0 min
Primary = 3.34 cfs @ 14.72 hrs, Volume= 4.402 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,970.87' @ 14.72 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**18.0" Round Culvert** L= 24.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,970.00' / 1,968.00' S= 0.0833 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=3.34 cfs @ 14.72 hrs HW=1,970.87' (Free Discharge)
1=Culvert (Inlet Controls 3.34 cfs @ 3.17 fps)

Summary for Pond SEMH: (new Pond)

Inflow Area = 54.642 ac, 0.00% Impervious, Inflow Depth > 1.45" for 25-yr event
Inflow = 6.09 cfs @ 13.80 hrs, Volume= 6.597 af
Outflow = 6.09 cfs @ 13.80 hrs, Volume= 6.597 af, Atten= 0%, Lag= 0.0 min
Primary = 6.09 cfs @ 13.80 hrs, Volume= 6.597 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,925.82' @ 13.80 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,924.00'	**24.0" Round Culvert** L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,924.00' / 1,924.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=6.09 cfs @ 13.80 hrs HW=1,925.82' (Free Discharge)
1=Culvert (Barrel Controls 6.09 cfs @ 2.66 fps)

Time span=3.00-35.00 hrs, dt=0.04 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1A: (new Subcat) Runoff Area=178,847 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=261' Slope=0.1500 '/' Tc=11.7 min CN=74 Runoff=15.52 cfs 0.889 af

Subcatchment1B: (new Subcat) Runoff Area=111,895 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=187' Slope=0.1500 '/' Tc=9.0 min CN=74 Runoff=11.00 cfs 0.556 af

Subcatchment1C: (new Subcat) Runoff Area=114,791 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=229' Tc=6.0 min CN=74 Runoff=13.14 cfs 0.570 af

Subcatchment2A: (new Subcat) Runoff Area=297,718 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=24.56 cfs 1.480 af

Subcatchment2B: (new Subcat) Runoff Area=200,643 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=260' Slope=0.1500 '/' Tc=11.7 min CN=74 Runoff=17.41 cfs 0.997 af

Subcatchment2C: (new Subcat) Runoff Area=211,164 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=296' Tc=11.1 min CN=74 Runoff=18.69 cfs 1.049 af

Subcatchment3A: (new Subcat) Runoff Area=67,565 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=5.57 cfs 0.336 af

Subcatchment3B: (new Subcat) Runoff Area=206,873 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=292' Slope=0.1500 '/' Tc=12.8 min CN=74 Runoff=17.28 cfs 1.028 af

Subcatchment4A: (new Subcat) Runoff Area=339,762 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=28.03 cfs 1.688 af

Subcatchment4B: (new Subcat) Runoff Area=109,746 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=153' Slope=0.1500 '/' Tc=7.6 min CN=74 Runoff=11.30 cfs 0.545 af

Subcatchment4C: (new Subcat) Runoff Area=109,094 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=268' Tc=9.2 min CN=74 Runoff=10.62 cfs 0.542 af

Subcatchment5A: (new Subcat) Runoff Area=46,695 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=3.85 cfs 0.232 af

Subcatchment5B: (new Subcat) Runoff Area=113,626 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=149' Slope=0.1500 '/' Tc=7.5 min CN=74 Runoff=11.81 cfs 0.565 af

Subcatchment5C: (new Subcat) Runoff Area=185,512 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=296' Tc=11.1 min CN=74 Runoff=16.42 cfs 0.922 af

Subcatchment6A: (new Subcat) Runoff Area=385,422 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=31.79 cfs 1.915 af

Subcatchment6B: (new Subcat) Runoff Area=124,047 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=156' Slope=0.1500 '/' Tc=7.8 min CN=74 Runoff=12.68 cfs 0.616 af

Subcatchment 6C: (new Subcat) Runoff Area=143,402 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=280' Tc=9.7 min CN=74 Runoff=13.62 cfs 0.713 af

Subcatchment 7A: (new Subcat) Runoff Area=309,322 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=262' Slope=0.1500 '/' Tc=11.8 min CN=74 Runoff=26.78 cfs 1.537 af

Subcatchment 7B: (new Subcat) Runoff Area=108,115 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=199' Slope=0.1500 '/' Tc=9.4 min CN=74 Runoff=10.38 cfs 0.537 af

Subcatchment 7C: (new Subcat) Runoff Area=55,104 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=170' Slope=0.1500 '/' Tc=8.3 min CN=74 Runoff=5.53 cfs 0.274 af

Subcatchment 8A: (new Subcat) Runoff Area=118,254 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=9.75 cfs 0.588 af

Subcatchment 8B: (new Subcat) Runoff Area=79,083 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=199' Slope=0.1500 '/' Tc=9.4 min CN=74 Runoff=7.59 cfs 0.393 af

Subcatchment 9A: (new Subcat) Runoff Area=385,759 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=300' Slope=0.1500 '/' Tc=13.1 min CN=74 Runoff=31.82 cfs 1.917 af

Subcatchment 10A: (new Subcat) Runoff Area=83,070 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=296' Slope=0.1500 '/' Tc=13.0 min CN=74 Runoff=6.89 cfs 0.413 af

Subcatchment 11A: (new Subcat) Runoff Area=172,006 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=245' Slope=0.1500 '/' Tc=11.1 min CN=74 Runoff=15.22 cfs 0.855 af

Reach 1R: (new Reach) Avg. Flow Depth=0.71' Max Vel=2.26 fps Inflow=15.52 cfs 0.889 af
n=0.030 L=657.0' S=0.0053 '/' Capacity=300.24 cfs Outflow=13.59 cfs 0.889 af

Reach 2R: (new Reach) Avg. Flow Depth=0.90' Max Vel=6.31 fps Inflow=55.34 cfs 3.495 af
n=0.030 L=946.0' S=0.0317 '/' Capacity=732.53 cfs Outflow=53.63 cfs 3.495 af

Reach 3R: (new Reach) Avg. Flow Depth=1.11' Max Vel=7.22 fps Inflow=82.77 cfs 5.877 af
n=0.030 L=181.0' S=0.0331 '/' Capacity=748.94 cfs Outflow=82.68 cfs 5.877 af

Reach 4R: (new Reach) Avg. Flow Depth=0.89' Max Vel=7.00 fps Inflow=58.48 cfs 4.263 af
n=0.030 L=202.0' S=0.0396 '/' Capacity=818.62 cfs Outflow=58.20 cfs 4.263 af

Reach 5R: (new Reach) Avg. Flow Depth=0.82' Max Vel=6.07 fps Inflow=47.42 cfs 3.003 af
n=0.030 L=1,281.0' S=0.0329 '/' Capacity=745.73 cfs Outflow=44.48 cfs 3.003 af

Reach 6R: (new Reach) Avg. Flow Depth=0.75' Max Vel=3.45 fps Inflow=26.78 cfs 1.537 af
n=0.030 L=1,221.0' S=0.0115 '/' Capacity=442.04 cfs Outflow=22.55 cfs 1.537 af

Reach 7R: (new Reach) Avg. Flow Depth=0.96' Max Vel=5.20 fps Inflow=48.60 cfs 3.611 af
n=0.030 L=300.0' S=0.0200 '/' Capacity=581.74 cfs Outflow=48.56 cfs 3.611 af

Reach 8R: (new Reach) Avg. Flow Depth=1.04' Max Vel=3.84 fps Inflow=40.70 cfs 2.472 af
n=0.030 L=200.0' S=0.0100 '/' Capacity=411.35 cfs Outflow=40.44 cfs 2.472 af

Reach 9R: (new Reach) Avg. Flow Depth=0.74' Max Vel=3.17 fps Inflow=21.85 cfs 1.248 af
n=0.030 L=750.0' S=0.0100 '/' Capacity=411.35 cfs Outflow=20.08 cfs 1.248 af

Pond 7P: SE Pond Peak Elev=1,943.21' Storage=491,333 cf Inflow=168.07 cfs 11.829 af
Outflow=8.20 cfs 11.046 af

Pond 8P: NW Pond Peak Elev=1,972.82' Storage=649,208 cf Inflow=137.88 cfs 9.329 af
Outflow=4.96 cfs 7.358 af

Pond B1B: (new Pond) Peak Elev=2,016.77' Storage=510 cf Inflow=11.00 cfs 0.556 af
Outflow=10.64 cfs 0.556 af

Pond B1C: (new Pond) Peak Elev=2,041.48' Storage=2,356 cf Inflow=13.14 cfs 0.570 af
Outflow=8.07 cfs 0.570 af

Pond B2B: (new Pond) Peak Elev=2,001.09' Storage=1,635 cf Inflow=17.41 cfs 0.997 af
Outflow=15.40 cfs 0.997 af

Pond B2C: (new Pond) Peak Elev=2,042.25' Storage=6,839 cf Inflow=18.69 cfs 1.049 af
Outflow=9.95 cfs 1.049 af

Pond B3B: (new Pond) Peak Elev=2,002.67' Storage=5,035 cf Inflow=17.28 cfs 1.028 af
Outflow=10.86 cfs 1.028 af

Pond B4B: (new Pond) Peak Elev=2,020.26' Storage=230 cf Inflow=11.30 cfs 0.545 af
Outflow=11.25 cfs 0.545 af

Pond B4C: (new Pond) Peak Elev=2,041.66' Storage=3,212 cf Inflow=10.62 cfs 0.542 af
Outflow=6.64 cfs 0.542 af

Pond B5B: (new Pond) Peak Elev=2,021.16' Storage=515 cf Inflow=11.81 cfs 0.565 af
Outflow=11.68 cfs 0.565 af

Pond B5C: (new Pond) Peak Elev=2,042.05' Storage=5,243 cf Inflow=16.42 cfs 0.922 af
Outflow=9.51 cfs 0.922 af

Pond B6B: (new Pond) Peak Elev=2,017.34' Storage=430 cf Inflow=12.68 cfs 0.616 af
Outflow=12.24 cfs 0.616 af

Pond B6C: (new Pond) Peak Elev=2,041.68' Storage=3,217 cf Inflow=13.62 cfs 0.713 af
Outflow=8.62 cfs 0.713 af

Pond B7B: (new Pond) Peak Elev=2,013.42' Storage=233 cf Inflow=10.38 cfs 0.537 af
Outflow=10.31 cfs 0.537 af

Pond B7C: (new Pond) Peak Elev=2,040.59' Storage=303 cf Inflow=5.53 cfs 0.274 af
Outflow=5.10 cfs 0.274 af

Pond B8B: (new Pond) Peak Elev=2,013.86' Storage=518 cf Inflow=7.59 cfs 0.393 af
Outflow=6.69 cfs 0.393 af

Pond C1B: (new Pond) Peak Elev=2,014.99' Inflow=18.64 cfs 1.127 af
21.2" Round Culvert n=0.010 L=104.0' S=0.0924 '/' Outflow=18.64 cfs 1.127 af

Pond C1C: (new Pond) Peak Elev=2,037.64' Inflow=8.07 cfs 0.570 af
15.9" Round Culvert n=0.010 L=205.0' S=0.1165 '/' Outflow=8.07 cfs 0.570 af

Pond C2B: (new Pond) Peak Elev=2,000.32' Inflow=25.29 cfs 2.046 af
21.2" Round Culvert n=0.010 L=177.0' S=0.1065 '/' Outflow=25.29 cfs 2.046 af

Pond C2C: (new Pond) Peak Elev=2,038.41' Inflow=9.95 cfs 1.049 af
15.9" Round Culvert n=0.010 L=317.0' S=0.1282 '/' Outflow=9.95 cfs 1.049 af

Pond C3B: (new Pond) Peak Elev=1,997.23' Inflow=10.86 cfs 1.028 af
21.1" Round Culvert n=0.010 L=150.0' S=0.0900 '/' Outflow=10.86 cfs 1.028 af

Pond C4B: (new Pond) Peak Elev=2,017.99' Inflow=16.86 cfs 1.088 af
21.2" Round Culvert n=0.010 L=164.0' S=0.0553 '/' Outflow=16.86 cfs 1.088 af

Pond C4C: (new Pond) Peak Elev=2,036.70' Inflow=6.64 cfs 0.542 af
21.2" Round Culvert n=0.010 L=479.0' S=0.0427 '/' Outflow=6.64 cfs 0.542 af

Pond C5B: (new Pond) Peak Elev=2,019.53' Inflow=19.39 cfs 1.487 af
21.2" Round Culvert n=0.010 L=105.0' S=0.0757 '/' Outflow=19.39 cfs 1.487 af

Pond C5C: (new Pond) Peak Elev=2,038.22' Inflow=9.51 cfs 0.922 af
15.9" Round Culvert n=0.010 L=184.0' S=0.1062 '/' Outflow=9.51 cfs 0.922 af

Pond C6B: (new Pond) Peak Elev=2,015.82' Inflow=20.02 cfs 1.329 af
21.2" Round Culvert n=0.010 L=102.0' S=0.0791 '/' Outflow=20.02 cfs 1.329 af

Pond C6C: (new Pond) Peak Elev=2,037.85' Inflow=8.62 cfs 0.713 af
15.9" Round Culvert n=0.010 L=202.0' S=0.1160 '/' Outflow=8.62 cfs 0.713 af

Pond C7B: (new Pond) Peak Elev=2,010.85' Inflow=15.40 cfs 0.811 af
21.2" Round Culvert n=0.010 L=115.0' S=0.0719 '/' Outflow=15.40 cfs 0.811 af

Pond C7C: (new Pond) Peak Elev=2,036.74' Inflow=5.10 cfs 0.274 af
15.9" Round Culvert n=0.010 L=253.0' S=0.1076 '/' Outflow=5.10 cfs 0.274 af

Pond C8B: (new Pond) Peak Elev=2,010.02' Inflow=6.69 cfs 0.393 af
15.9" Round Culvert n=0.010 L=146.0' S=0.0571 '/' Outflow=6.69 cfs 0.393 af

Pond MH1: Drop MH Peak Elev=1,990.07' Inflow=18.64 cfs 1.127 af
30.0" Round Culvert n=0.025 L=161.0' S=0.0000 '/' Outflow=18.64 cfs 1.127 af

Pond MH2: (new Pond) Peak Elev=1,957.77' Inflow=25.29 cfs 2.046 af
30.0" Round Culvert n=0.025 L=188.0' S=0.0000 '/' Outflow=25.29 cfs 2.046 af

Pond MH3: (new Pond) Peak Elev=1,956.78' Inflow=10.86 cfs 1.028 af
30.0" Round Culvert n=0.025 L=218.0' S=0.0000 '/' Outflow=10.86 cfs 1.028 af

Pond MH4: (new Pond) Peak Elev=1,999.51' Inflow=16.86 cfs 1.088 af
30.0" Round Culvert n=0.025 L=102.0' S=0.0000 '/' Outflow=16.86 cfs 1.088 af

Pond MH5: (new Pond) Peak Elev=1,986.58' Inflow=19.39 cfs 1.487 af
30.0" Round Culvert n=0.025 L=207.0' S=0.0000 '/' Outflow=19.39 cfs 1.487 af

Pond MH6: (new Pond) Peak Elev=1,978.85' Inflow=20.02 cfs 1.329 af
30.0" Round Culvert n=0.025 L=223.0' S=0.0000 '/' Outflow=20.02 cfs 1.329 af

Pond MH7: (new Pond) Peak Elev=1,981.65' Inflow=15.40 cfs 0.811 af
30.0" Round Culvert n=0.025 L=168.0' S=0.0000 '/' Outflow=15.40 cfs 0.811 af

Pond MH8: (new Pond) Peak Elev=1,987.84' Inflow=6.69 cfs 0.393 af
30.0" Round Culvert n=0.025 L=113.0' S=0.0000 '/' Outflow=6.69 cfs 0.393 af

Pond NWMH: (new Pond) Peak Elev=1,971.10' Inflow=4.96 cfs 7.358 af
18.0" Round Culvert n=0.025 L=24.0' S=0.0833 '/' Outflow=4.96 cfs 7.358 af

Pond SEMH: (new Pond) Peak Elev=1,926.19' Inflow=8.20 cfs 11.046 af
24.0" Round Culvert n=0.025 L=71.0' S=0.0000 '/' Outflow=8.20 cfs 11.046 af

Total Runoff Area = 97.739 ac Runoff Volume = 21.158 af Average Runoff Depth = 2.60"
100.00% Pervious = 97.739 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1A: (new Subcat)

Runoff = 15.52 cfs @ 12.12 hrs, Volume= 0.889 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
178,847	74	>75% Grass cover, Good, HSG C
178,847		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	261	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 1B: (new Subcat)

Runoff = 11.00 cfs @ 12.08 hrs, Volume= 0.556 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
111,895	74	>75% Grass cover, Good, HSG C
111,895		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	187	0.1500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 1C: (new Subcat)

Runoff = 13.14 cfs @ 12.04 hrs, Volume= 0.570 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
114,791	74	>75% Grass cover, Good, HSG C
114,791		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	51	0.0500	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	178	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.0	229	Total			

Summary for Subcatchment 2A: (new Subcat)

Runoff = 24.56 cfs @ 12.14 hrs, Volume= 1.480 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
297,718	74	>75% Grass cover, Good, HSG C
297,718		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 2B: (new Subcat)

Runoff = 17.41 cfs @ 12.12 hrs, Volume= 0.997 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
200,643	74	>75% Grass cover, Good, HSG C
200,643		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	260	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 2C: (new Subcat)

Runoff = 18.69 cfs @ 12.11 hrs, Volume= 1.049 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
211,164	74	>75% Grass cover, Good, HSG C
211,164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	123	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	173	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.1	296	Total			

Summary for Subcatchment 3A: (new Subcat)

Runoff = 5.57 cfs @ 12.14 hrs, Volume= 0.336 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
67,565	74	>75% Grass cover, Good, HSG C
67,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 3B: (new Subcat)

Runoff = 17.28 cfs @ 12.13 hrs, Volume= 1.028 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
206,873	74	>75% Grass cover, Good, HSG C
206,873		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	292	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 4A: (new Subcat)

Runoff = 28.03 cfs @ 12.14 hrs, Volume= 1.688 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
339,762	74	>75% Grass cover, Good, HSG C
339,762		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 4B: (new Subcat)

Runoff = 11.30 cfs @ 12.06 hrs, Volume= 0.545 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
109,746	74	>75% Grass cover, Good, HSG C
109,746		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	153	0.1500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 4C: (new Subcat)

Runoff = 10.62 cfs @ 12.09 hrs, Volume= 0.542 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
109,094	74	>75% Grass cover, Good, HSG C
109,094		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	95	0.0500	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	173	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	268	Total			

Summary for Subcatchment 5A: (new Subcat)

Runoff = 3.85 cfs @ 12.14 hrs, Volume= 0.232 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
46,695	74	>75% Grass cover, Good, HSG C
46,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 5B: (new Subcat)

Runoff = 11.81 cfs @ 12.06 hrs, Volume= 0.565 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
113,626	74	>75% Grass cover, Good, HSG C
113,626		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	149	0.1500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 5C: (new Subcat)

Runoff = 16.42 cfs @ 12.11 hrs, Volume= 0.922 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
185,512	74	>75% Grass cover, Good, HSG C
185,512		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	123	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	173	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.1	296	Total			

Summary for Subcatchment 6A: (new Subcat)

Runoff = 31.79 cfs @ 12.14 hrs, Volume= 1.915 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
385,422	74	>75% Grass cover, Good, HSG C
385,422		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 6B: (new Subcat)

Runoff = 12.68 cfs @ 12.07 hrs, Volume= 0.616 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
124,047	74	>75% Grass cover, Good, HSG C
124,047		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	156	0.1500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 6C: (new Subcat)

Runoff = 13.62 cfs @ 12.09 hrs, Volume= 0.713 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
143,402	74	>75% Grass cover, Good, HSG C
143,402		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	102	0.0500	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"
1.1	178	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.7	280	Total			

Summary for Subcatchment 7A: (new Subcat)

Runoff = 26.78 cfs @ 12.12 hrs, Volume= 1.537 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
309,322	74	>75% Grass cover, Good, HSG C
309,322		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	262	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 7B: (new Subcat)

Runoff = 10.38 cfs @ 12.09 hrs, Volume= 0.537 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
108,115	74	>75% Grass cover, Good, HSG C
108,115		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	199	0.1500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 7C: (new Subcat)

Runoff = 5.53 cfs @ 12.07 hrs, Volume= 0.274 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
55,104	74	>75% Grass cover, Good, HSG C
55,104		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	170	0.1500	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 8A: (new Subcat)

Runoff = 9.75 cfs @ 12.14 hrs, Volume= 0.588 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
118,254	74	>75% Grass cover, Good, HSG C
118,254		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 8B: (new Subcat)

Runoff = 7.59 cfs @ 12.09 hrs, Volume= 0.393 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
79,083	74	>75% Grass cover, Good, HSG C
79,083		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	199	0.1500	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 9A: (new Subcat)

Runoff = 31.82 cfs @ 12.14 hrs, Volume= 1.917 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
385,759	74	>75% Grass cover, Good, HSG C
385,759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	300	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 10A: (new Subcat)

Runoff = 6.89 cfs @ 12.14 hrs, Volume= 0.413 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
83,070	74	>75% Grass cover, Good, HSG C
83,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	296	0.1500	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

Summary for Subcatchment 11A: (new Subcat)

Runoff = 15.22 cfs @ 12.11 hrs, Volume= 0.855 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs
ND_Burleigh 24-hr S1 100-yr Rainfall=5.29"

Area (sf)	CN	Description
172,006	74	>75% Grass cover, Good, HSG C
172,006		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	245	0.1500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.07"

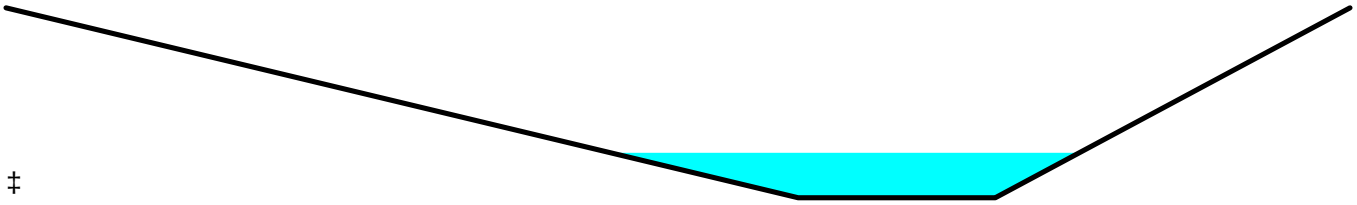
Summary for Reach 1R: (new Reach)

Inflow Area = 4.106 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 15.52 cfs @ 12.12 hrs, Volume= 0.889 af
Outflow = 13.59 cfs @ 12.18 hrs, Volume= 0.889 af, Atten= 12%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 2.26 fps, Min. Travel Time= 4.8 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 17.4 min

Peak Storage= 3,935 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 300.24 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 657.0' Slope= 0.0053 '/'
Inlet Invert= 1,985.50', Outlet Invert= 1,982.00'



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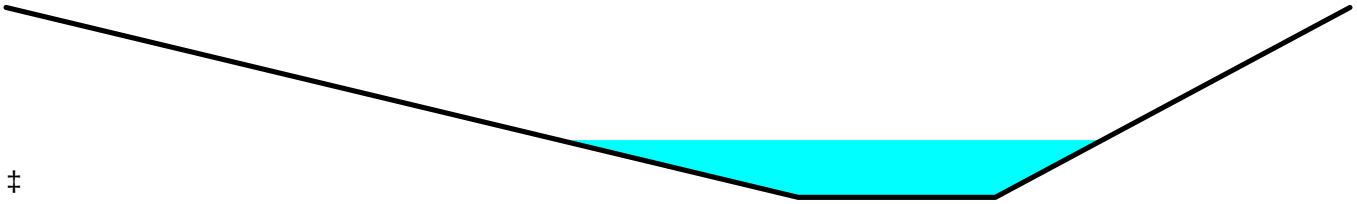
Summary for Reach 2R: (new Reach)

Inflow Area = 16.144 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 55.34 cfs @ 12.14 hrs, Volume= 3.495 af
Outflow = 53.63 cfs @ 12.18 hrs, Volume= 3.495 af, Atten= 3%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 6.31 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 8.9 min

Peak Storage= 8,026 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 732.53 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 946.0' Slope= 0.0317 '/'
Inlet Invert= 1,982.00', Outlet Invert= 1,952.00'



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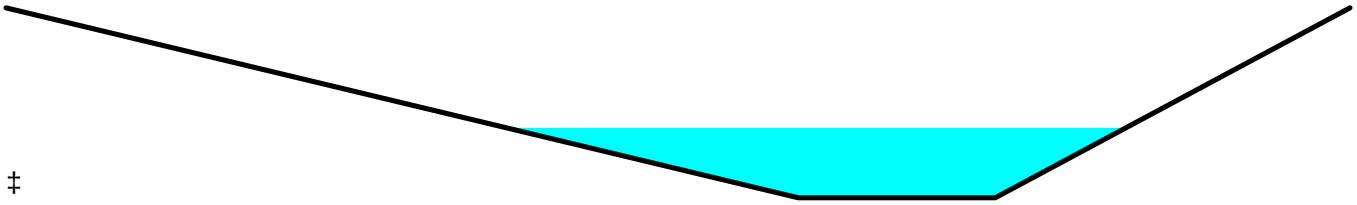
Summary for Reach 3R: (new Reach)

Inflow Area = 27.149 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 82.77 cfs @ 12.16 hrs, Volume= 5.877 af
Outflow = 82.68 cfs @ 12.17 hrs, Volume= 5.877 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 7.22 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 1.4 min

Peak Storage= 2,073 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.11'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 748.94 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 181.0' Slope= 0.0331 '/'
Inlet Invert= 1,952.00', Outlet Invert= 1,946.00'



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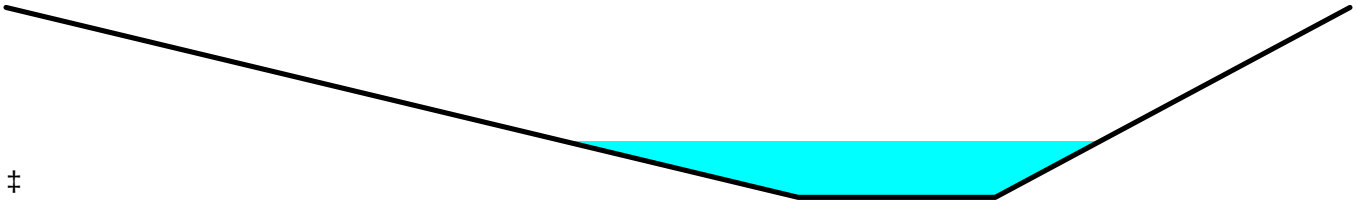
Summary for Reach 4R: (new Reach)

Inflow Area = 19.693 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 58.48 cfs @ 12.18 hrs, Volume= 4.263 af
Outflow = 58.20 cfs @ 12.18 hrs, Volume= 4.263 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 7.00 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.08 fps, Avg. Travel Time= 1.6 min

Peak Storage= 1,677 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.89'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 818.62 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 202.0' Slope= 0.0396 '/'
Inlet Invert= 1,954.00', Outlet Invert= 1,946.00'



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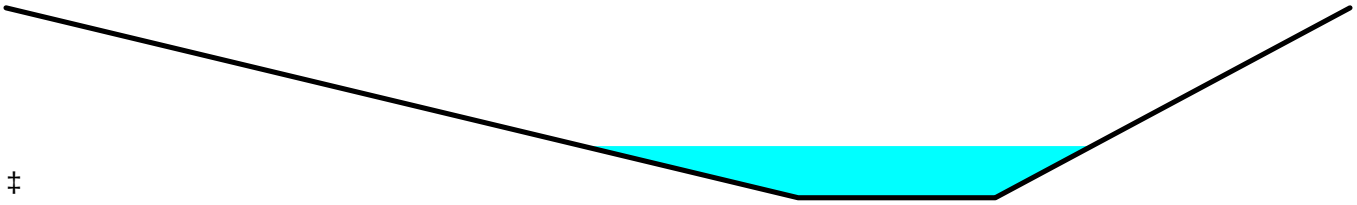
Summary for Reach 5R: (new Reach)

Inflow Area = 13.872 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 47.42 cfs @ 12.13 hrs, Volume= 3.003 af
Outflow = 44.48 cfs @ 12.17 hrs, Volume= 3.003 af, Atten= 6%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 6.07 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 12.2 min

Peak Storage= 9,365 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 745.73 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 1,281.0' Slope= 0.0329 '/'
Inlet Invert= 1,996.10', Outlet Invert= 1,954.00'



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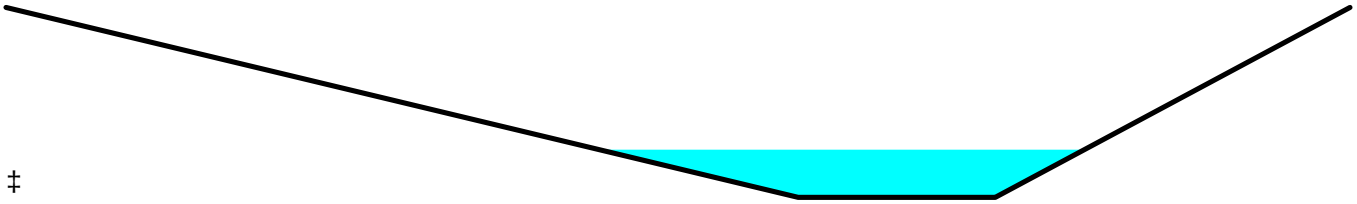
Summary for Reach 6R: (new Reach)

Inflow Area = 7.101 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 26.78 cfs @ 12.12 hrs, Volume= 1.537 af
Outflow = 22.55 cfs @ 12.20 hrs, Volume= 1.537 af, Atten= 16%, Lag= 4.4 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 3.45 fps, Min. Travel Time= 5.9 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 21.5 min

Peak Storage= 7,972 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 442.04 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 1,221.0' Slope= 0.0115 '/'
Inlet Invert= 1,996.10', Outlet Invert= 1,982.00'



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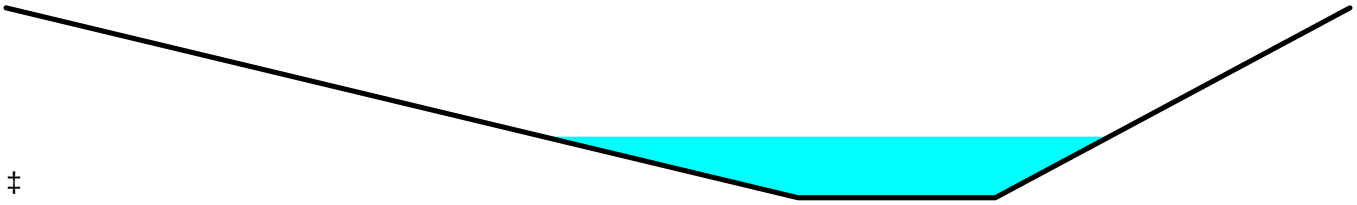
Summary for Reach 7R: (new Reach)

Inflow Area = 16.683 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 48.60 cfs @ 12.16 hrs, Volume= 3.611 af
Outflow = 48.56 cfs @ 12.17 hrs, Volume= 3.611 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 5.20 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 3.4 min

Peak Storage= 2,800 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.96'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 581.74 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 300.0' Slope= 0.0200 '/'
Inlet Invert= 1,982.00', Outlet Invert= 1,976.00'



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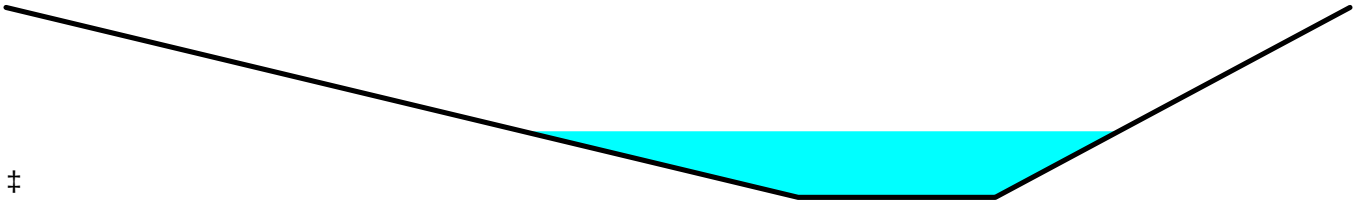
Summary for Reach 8R: (new Reach)

Inflow Area = 11.418 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 40.70 cfs @ 12.14 hrs, Volume= 2.472 af
Outflow = 40.44 cfs @ 12.15 hrs, Volume= 2.472 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 3.84 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.08 fps, Avg. Travel Time= 3.1 min

Peak Storage= 2,104 cf @ 12.15 hrs
Average Depth at Peak Storage= 1.04'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 411.35 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 200.0' Slope= 0.0100 '/'
Inlet Invert= 1,978.00', Outlet Invert= 1,976.00'



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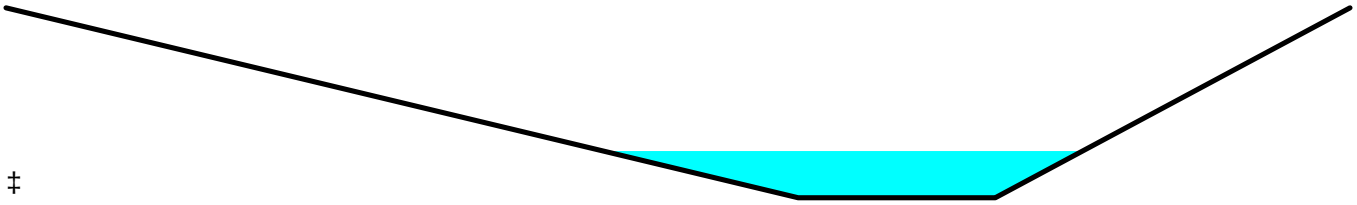
Summary for Reach 9R: (new Reach)

Inflow Area = 5.764 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 21.85 cfs @ 12.12 hrs, Volume= 1.248 af
Outflow = 20.08 cfs @ 12.17 hrs, Volume= 1.248 af, Atten= 8%, Lag= 3.1 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Max. Velocity= 3.17 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 14.2 min

Peak Storage= 4,744 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 3.00' Flow Area= 58.7 sf, Capacity= 411.35 cfs

5.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 6.7 3.0 '/' Top Width= 34.10'
Length= 750.0' Slope= 0.0100 '/'
Inlet Invert= 1,985.50', Outlet Invert= 1,978.00'



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Summary for Pond 7P: SE Pond

Inflow Area = 54.642 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 168.07 cfs @ 12.17 hrs, Volume= 11.829 af
Outflow = 8.20 cfs @ 14.07 hrs, Volume= 11.046 af, Atten= 95%, Lag= 114.3 min
Primary = 8.20 cfs @ 14.07 hrs, Volume= 11.046 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Starting Elev= 1,938.00' Surf.Area= 49,820 sf Storage= 159,935 cf
Peak Elev= 1,943.21' @ 14.07 hrs Surf.Area= 77,996 sf Storage= 491,333 cf (331,398 cf above start)
Flood Elev= 1,944.00' Surf.Area= 82,507 sf Storage= 555,034 cf (395,099 cf above start)

Plug-Flow detention time= 738.5 min calculated for 7.374 af (62% of inflow)
Center-of-Mass det. time= 451.5 min (1,279.4 - 828.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,934.00'	555,034 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,934.00	30,383	0	0
1,936.00	39,866	70,249	70,249
1,938.00	49,820	89,686	159,935
1,940.00	60,245	110,065	270,000
1,942.00	71,141	131,386	401,386
1,944.00	82,507	153,648	555,034

Device	Routing	Invert	Outlet Devices
#1	Primary	1,938.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=8.20 cfs @ 14.07 hrs HW=1,943.21' TW=1,926.19' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 8.20 cfs @ 10.45 fps)

Summary for Pond 8P: NW Pond

Inflow Area = 43.097 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 137.88 cfs @ 12.14 hrs, Volume= 9.329 af
Outflow = 4.96 cfs @ 14.80 hrs, Volume= 7.358 af, Atten= 96%, Lag= 159.7 min
Primary = 4.96 cfs @ 14.80 hrs, Volume= 7.358 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Starting Elev= 1,970.00' Surf.Area= 86,032 sf Storage= 373,558 cf
Peak Elev= 1,972.82' @ 14.81 hrs Surf.Area= 109,588 sf Storage= 649,208 cf (275,650 cf above start)
Flood Elev= 1,974.00' Surf.Area= 119,637 sf Storage= 784,431 cf (410,873 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 499.9 min (1,326.3 - 826.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,964.00'	784,431 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,964.00	39,106	0	0
1,966.00	54,284	93,390	93,390
1,968.00	69,926	124,210	217,600
1,970.00	86,032	155,958	373,558
1,972.00	102,602	188,634	562,192
1,974.00	119,637	222,239	784,431

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.96 cfs @ 14.80 hrs HW=1,972.82' TW=1,971.10' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 4.96 cfs @ 6.31 fps)

Summary for Pond B1B: (new Pond)

Inflow Area = 2.569 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 11.00 cfs @ 12.08 hrs, Volume= 0.556 af
Outflow = 10.64 cfs @ 12.10 hrs, Volume= 0.556 af, Atten= 3%, Lag= 1.0 min
Primary = 10.64 cfs @ 12.10 hrs, Volume= 0.556 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,016.77' @ 12.10 hrs Surf.Area= 1,530 sf Storage= 510 cf
Flood Elev= 2,019.11' Surf.Area= 10,868 sf Storage= 12,560 cf

Plug-Flow detention time= 0.5 min calculated for 0.555 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (820.3 - 819.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,016.11'	12,560 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,016.11	5	0	0
2,018.00	4,349	4,115	4,115
2,019.11	10,868	8,445	12,560

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.11'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.45 cfs @ 12.10 hrs HW=2,016.77' TW=2,014.92' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Weir Controls 10.45 cfs @ 2.65 fps)

Summary for Pond B1C: (new Pond)

Inflow Area = 2.635 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 13.14 cfs @ 12.04 hrs, Volume= 0.570 af
Outflow = 8.07 cfs @ 12.13 hrs, Volume= 0.570 af, Atten= 39%, Lag= 5.3 min
Primary = 8.07 cfs @ 12.13 hrs, Volume= 0.570 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,041.48' @ 12.13 hrs Surf.Area= 3,183 sf Storage= 2,356 cf
Flood Elev= 2,043.00' Surf.Area= 9,630 sf Storage= 11,278 cf

Plug-Flow detention time= 1.7 min calculated for 0.570 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (818.8 - 817.0)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	11,278 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,305	4,310	4,310
2,043.00	9,630	6,968	11,278

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.04 cfs @ 12.13 hrs HW=2,041.47' TW=2,037.63' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 8.04 cfs @ 5.83 fps)

Summary for Pond B2B: (new Pond)

Inflow Area = 4.606 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 17.41 cfs @ 12.12 hrs, Volume= 0.997 af
Outflow = 15.40 cfs @ 12.24 hrs, Volume= 0.997 af, Atten= 12%, Lag= 7.1 min
Primary = 15.40 cfs @ 12.24 hrs, Volume= 0.997 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,001.09' @ 12.21 hrs Surf.Area= 2,567 sf Storage= 1,635 cf
Flood Elev= 2,002.35' Surf.Area= 5,788 sf Storage= 6,646 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min (822.8 - 822.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,999.35'	6,646 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,999.35	5	0	0
2,000.00	270	89	89
2,002.00	4,488	4,758	4,847
2,002.35	5,788	1,798	6,646

Device	Routing	Invert	Outlet Devices
#1	Primary	1,999.35'	**21.2" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.08 cfs @ 12.24 hrs HW=2,001.05' TW=2,000.32' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 10.08 cfs @ 4.11 fps)

Summary for Pond B2C: (new Pond)

Inflow Area = 4.848 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 18.69 cfs @ 12.11 hrs, Volume= 1.049 af
Outflow = 9.95 cfs @ 12.29 hrs, Volume= 1.049 af, Atten= 47%, Lag= 10.7 min
Primary = 9.95 cfs @ 12.29 hrs, Volume= 1.049 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,042.25' @ 12.29 hrs Surf.Area= 6,947 sf Storage= 6,839 cf
Flood Elev= 2,043.00' Surf.Area= 11,914 sf Storage= 13,942 cf

Plug-Flow detention time= 4.8 min calculated for 1.048 af (100% of inflow)
Center-of-Mass det. time= 4.8 min (826.5 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	13,942 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	5,320	5,325	5,325
2,043.00	11,914	8,617	13,942

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.94 cfs @ 12.29 hrs HW=2,042.24' TW=2,038.41' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 9.94 cfs @ 7.21 fps)

Summary for Pond B3B: (new Pond)

Inflow Area = 4.749 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 17.28 cfs @ 12.13 hrs, Volume= 1.028 af
Outflow = 10.86 cfs @ 12.29 hrs, Volume= 1.028 af, Atten= 37%, Lag= 9.2 min
Primary = 10.86 cfs @ 12.29 hrs, Volume= 1.028 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,002.67' @ 12.29 hrs Surf.Area= 4,650 sf Storage= 5,035 cf
Flood Elev= 2,003.00' Surf.Area= 5,648 sf Storage= 6,717 cf

Plug-Flow detention time= 3.0 min calculated for 1.027 af (100% of inflow)
Center-of-Mass det. time= 3.0 min (826.3 - 823.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,000.00'	6,717 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,000.00	5	0	0
2,002.00	2,592	2,597	2,597
2,003.00	5,648	4,120	6,717

Device	Routing	Invert	Outlet Devices
#1	Primary	2,000.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.85 cfs @ 12.29 hrs HW=2,002.67' TW=1,997.23' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 10.85 cfs @ 7.87 fps)

Summary for Pond B4B: (new Pond)

Inflow Area = 2.519 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 11.30 cfs @ 12.06 hrs, Volume= 0.545 af
Outflow = 11.25 cfs @ 12.08 hrs, Volume= 0.545 af, Atten= 0%, Lag= 0.9 min
Primary = 11.25 cfs @ 12.08 hrs, Volume= 0.545 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,020.26' @ 12.08 hrs Surf.Area= 1,149 sf Storage= 230 cf
Flood Elev= 2,022.57' Surf.Area= 11,249 sf Storage= 12,883 cf

Plug-Flow detention time= 0.1 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (818.7 - 818.5)

Volume	Invert	Avail.Storage	Storage Description
#1	2,019.57'	12,883 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,019.57	5	0	0
2,020.00	233	51	51
2,022.00	7,310	7,543	7,594
2,022.57	11,249	5,289	12,883

Device	Routing	Invert	Outlet Devices
#1	Primary	2,019.57'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.20 cfs @ 12.08 hrs HW=2,020.26' TW=2,017.95' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Weir Controls 11.20 cfs @ 2.71 fps)

Summary for Pond B4C: (new Pond)

Inflow Area = 2.504 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 10.62 cfs @ 12.09 hrs, Volume= 0.542 af
Outflow = 6.64 cfs @ 12.20 hrs, Volume= 0.542 af, Atten= 38%, Lag= 7.1 min
Primary = 6.64 cfs @ 12.20 hrs, Volume= 0.542 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,041.66' @ 12.20 hrs Surf.Area= 3,862 sf Storage= 3,212 cf
Flood Elev= 2,043.00' Surf.Area= 10,437 sf Storage= 12,194 cf

Plug-Flow detention time= 5.4 min calculated for 0.541 af (100% of inflow)
Center-of-Mass det. time= 5.4 min (825.4 - 820.0)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	12,194 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,647	4,652	4,652
2,043.00	10,437	7,542	12,194

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=6.63 cfs @ 12.20 hrs HW=2,041.66' TW=2,036.70' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 6.63 cfs @ 4.81 fps)

Summary for Pond B5B: (new Pond)

Inflow Area = 2.608 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 11.81 cfs @ 12.06 hrs, Volume= 0.565 af
Outflow = 11.68 cfs @ 12.08 hrs, Volume= 0.565 af, Atten= 1%, Lag= 1.2 min
Primary = 11.68 cfs @ 12.08 hrs, Volume= 0.565 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,021.16' @ 12.08 hrs Surf.Area= 1,454 sf Storage= 515 cf
Flood Elev= 2,023.45' Surf.Area= 11,886 sf Storage= 13,400 cf

Plug-Flow detention time= 0.4 min calculated for 0.564 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (818.9 - 818.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,020.45'	13,400 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,020.45	5	0	0
2,022.00	3,186	2,473	2,473
2,023.45	11,886	10,927	13,400

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.45'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.67 cfs @ 12.08 hrs HW=2,021.16' TW=2,019.48' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 11.67 cfs @ 2.75 fps)

Summary for Pond B5C: (new Pond)

Inflow Area = 4.259 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 16.42 cfs @ 12.11 hrs, Volume= 0.922 af
Outflow = 9.51 cfs @ 12.27 hrs, Volume= 0.922 af, Atten= 42%, Lag= 9.4 min
Primary = 9.51 cfs @ 12.27 hrs, Volume= 0.922 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,042.05' @ 12.27 hrs Surf.Area= 5,291 sf Storage= 5,243 cf
Flood Elev= 2,043.00' Surf.Area= 11,094 sf Storage= 13,001 cf

Plug-Flow detention time= 3.8 min calculated for 0.921 af (100% of inflow)
Center-of-Mass det. time= 3.8 min (825.5 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	13,001 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,966	4,971	4,971
2,043.00	11,094	8,030	13,001

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.50 cfs @ 12.27 hrs HW=2,042.05' TW=2,038.21' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 9.50 cfs @ 6.89 fps)

Summary for Pond B6B: (new Pond)

Inflow Area = 2.848 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 12.68 cfs @ 12.07 hrs, Volume= 0.616 af
Outflow = 12.24 cfs @ 12.09 hrs, Volume= 0.616 af, Atten= 3%, Lag= 1.2 min
Primary = 12.24 cfs @ 12.09 hrs, Volume= 0.616 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3

Peak Elev= 2,017.34' @ 12.08 hrs Surf.Area= 1,105 sf Storage= 430 cf
Flood Elev= 2,019.57' Surf.Area= 8,958 sf Storage= 10,093 cf

Plug-Flow detention time= 0.3 min calculated for 0.616 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (819.0 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	2,016.57'	10,093 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,016.57	5	0	0
2,018.00	2,038	1,461	1,461
2,019.57	8,958	8,632	10,093

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.57'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.13 cfs @ 12.09 hrs HW=2,017.33' TW=2,015.71' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 12.13 cfs @ 4.20 fps)

Summary for Pond B6C: (new Pond)

Inflow Area = 3.292 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 13.62 cfs @ 12.09 hrs, Volume= 0.713 af
Outflow = 8.62 cfs @ 12.21 hrs, Volume= 0.713 af, Atten= 37%, Lag= 7.3 min
Primary = 8.62 cfs @ 12.21 hrs, Volume= 0.713 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,041.68' @ 12.21 hrs Surf.Area= 3,814 sf Storage= 3,217 cf
Flood Elev= 2,043.00' Surf.Area= 10,157 sf Storage= 11,874 cf

Plug-Flow detention time= 2.4 min calculated for 0.712 af (100% of inflow)
Center-of-Mass det. time= 2.4 min (822.8 - 820.5)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	11,874 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	4,527	4,532	4,532
2,043.00	10,157	7,342	11,874

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.60 cfs @ 12.21 hrs HW=2,041.68' TW=2,037.84' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 8.60 cfs @ 6.24 fps)

Summary for Pond B7B: (new Pond)

Inflow Area = 2.482 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 10.38 cfs @ 12.09 hrs, Volume= 0.537 af
Outflow = 10.31 cfs @ 12.10 hrs, Volume= 0.537 af, Atten= 1%, Lag= 0.5 min
Primary = 10.31 cfs @ 12.10 hrs, Volume= 0.537 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,013.42' @ 12.10 hrs Surf.Area= 712 sf Storage= 233 cf
Flood Elev= 2,015.77' Surf.Area= 7,413 sf Storage= 8,577 cf

Plug-Flow detention time= 0.2 min calculated for 0.537 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (820.4 - 820.2)

Volume	Invert	Avail.Storage	Storage Description
#1	2,012.77'	8,577 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,012.77	5	0	0
2,014.00	1,342	828	828
2,015.77	7,413	7,748	8,577

Device	Routing	Invert	Outlet Devices
#1	Primary	2,012.77'	**23.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.05 cfs @ 12.10 hrs HW=2,013.41' TW=2,010.79' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 10.05 cfs @ 2.61 fps)

Summary for Pond B7C: (new Pond)

Inflow Area = 1.265 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 5.53 cfs @ 12.07 hrs, Volume= 0.274 af
Outflow = 5.10 cfs @ 12.11 hrs, Volume= 0.274 af, Atten= 8%, Lag= 1.9 min
Primary = 5.10 cfs @ 12.11 hrs, Volume= 0.274 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,040.59' @ 12.11 hrs Surf.Area= 1,023 sf Storage= 303 cf
Flood Elev= 2,043.00' Surf.Area= 7,824 sf Storage= 9,109 cf

Plug-Flow detention time= 0.5 min calculated for 0.273 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (819.7 - 819.2)

Volume	Invert	Avail.Storage	Storage Description
#1	2,040.00'	9,109 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,040.00	5	0	0
2,042.00	3,461	3,466	3,466
2,043.00	7,824	5,643	9,109

Device	Routing	Invert	Outlet Devices
#1	Primary	2,040.00'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.05 cfs @ 12.11 hrs HW=2,040.58' TW=2,036.73' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 5.05 cfs @ 3.66 fps)

Summary for Pond B8B: (new Pond)

Inflow Area = 1.815 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 7.59 cfs @ 12.09 hrs, Volume= 0.393 af
Outflow = 6.69 cfs @ 12.14 hrs, Volume= 0.393 af, Atten= 12%, Lag= 2.8 min
Primary = 6.69 cfs @ 12.14 hrs, Volume= 0.393 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,013.86' @ 12.14 hrs Surf.Area= 1,015 sf Storage= 518 cf
Flood Elev= 2,015.84' Surf.Area= 7,724 sf Storage= 8,846 cf

Plug-Flow detention time= 0.5 min calculated for 0.393 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (820.6 - 820.2)

Volume	Invert	Avail.Storage	Storage Description
#1	2,012.84'	8,846 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,012.84	5	0	0
2,014.00	1,158	675	675
2,015.84	7,724	8,171	8,846

Device	Routing	Invert	Outlet Devices
#1	Primary	2,012.84'	**15.9" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.63 cfs @ 12.14 hrs HW=2,013.84' TW=2,010.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 6.63 cfs @ 4.81 fps)

Summary for Pond C1B: (new Pond)

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 18.64 cfs @ 12.11 hrs, Volume= 1.127 af
Outflow = 18.64 cfs @ 12.11 hrs, Volume= 1.127 af, Atten= 0%, Lag= 0.0 min
Primary = 18.64 cfs @ 12.11 hrs, Volume= 1.127 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3

Peak Elev= 2,014.99' @ 12.11 hrs
Flood Elev= 2,016.11'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,011.61'	**21.2" Round Culvert** L= 104.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,011.61' / 2,002.00' S= 0.0924 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=18.43 cfs @ 12.11 hrs HW=2,014.93' TW=1,990.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 18.43 cfs @ 7.52 fps)

Summary for Pond C1C: (new Pond)

Inflow Area = 2.635 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 8.07 cfs @ 12.13 hrs, Volume= 0.570 af
Outflow = 8.07 cfs @ 12.13 hrs, Volume= 0.570 af, Atten= 0%, Lag= 0.0 min
Primary = 8.07 cfs @ 12.13 hrs, Volume= 0.570 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,037.64' @ 12.13 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 205.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,011.61' S= 0.1165 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=8.04 cfs @ 12.13 hrs HW=2,037.63' TW=2,014.84' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.04 cfs @ 5.83 fps)

Summary for Pond C2B: (new Pond)

Inflow Area = 9.454 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 25.29 cfs @ 12.24 hrs, Volume= 2.046 af
Outflow = 25.29 cfs @ 12.24 hrs, Volume= 2.046 af, Atten= 0%, Lag= 0.0 min
Primary = 25.29 cfs @ 12.24 hrs, Volume= 2.046 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,000.32' @ 12.24 hrs
Flood Elev= 1,999.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,994.85'	**21.2" Round Culvert** L= 177.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,994.85' / 1,976.00' S= 0.1065 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=25.23 cfs @ 12.24 hrs HW=2,000.30' TW=1,957.76' (Dynamic Tailwater)
1=Culvert (Inlet Controls 25.23 cfs @ 10.29 fps)

Summary for Pond C2C: (new Pond)

Inflow Area = 4.848 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 9.95 cfs @ 12.29 hrs, Volume= 1.049 af
Outflow = 9.95 cfs @ 12.29 hrs, Volume= 1.049 af, Atten= 0%, Lag= 0.0 min
Primary = 9.95 cfs @ 12.29 hrs, Volume= 1.049 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,038.41' @ 12.29 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 317.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 1,994.85' S= 0.1282 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=9.94 cfs @ 12.29 hrs HW=2,038.41' TW=1,999.25' (Dynamic Tailwater)
1=Culvert (Inlet Controls 9.94 cfs @ 7.21 fps)

Summary for Pond C3B: (new Pond)

Inflow Area = 4.749 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 10.86 cfs @ 12.29 hrs, Volume= 1.028 af
Outflow = 10.86 cfs @ 12.29 hrs, Volume= 1.028 af, Atten= 0%, Lag= 0.0 min
Primary = 10.86 cfs @ 12.29 hrs, Volume= 1.028 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,997.23' @ 12.29 hrs
Flood Elev= 2,000.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,995.50'	**21.1" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,995.50' / 1,982.00' S= 0.0900 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.43 sf

Primary OutFlow Max=10.85 cfs @ 12.29 hrs HW=1,997.23' TW=1,956.78' (Dynamic Tailwater)
1=Culvert (Inlet Controls 10.85 cfs @ 4.48 fps)

Summary for Pond C4B: (new Pond)

Inflow Area = 5.024 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 16.86 cfs @ 12.09 hrs, Volume= 1.088 af
Outflow = 16.86 cfs @ 12.09 hrs, Volume= 1.088 af, Atten= 0%, Lag= 0.0 min
Primary = 16.86 cfs @ 12.09 hrs, Volume= 1.088 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,017.99' @ 12.09 hrs
Flood Elev= 2,019.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,015.07'	**21.2" Round Culvert** L= 164.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,015.07' / 2,006.00' S= 0.0553 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=16.57 cfs @ 12.09 hrs HW=2,017.92' TW=1,999.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 16.57 cfs @ 6.76 fps)

Summary for Pond C4C: (new Pond)

Inflow Area = 2.504 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 6.64 cfs @ 12.20 hrs, Volume= 0.542 af
Outflow = 6.64 cfs @ 12.20 hrs, Volume= 0.542 af, Atten= 0%, Lag= 0.0 min
Primary = 6.64 cfs @ 12.20 hrs, Volume= 0.542 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,036.70' @ 12.20 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**21.2" Round Culvert** L= 479.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,015.07' S= 0.0427 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=6.63 cfs @ 12.20 hrs HW=2,036.70' TW=2,017.09' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.63 cfs @ 3.73 fps)

Summary for Pond C5B: (new Pond)

Inflow Area = 6.867 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 19.39 cfs @ 12.09 hrs, Volume= 1.487 af
Outflow = 19.39 cfs @ 12.09 hrs, Volume= 1.487 af, Atten= 0%, Lag= 0.0 min
Primary = 19.39 cfs @ 12.09 hrs, Volume= 1.487 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,019.53' @ 12.09 hrs
Flood Elev= 2,020.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,015.95'	**21.2" Round Culvert** L= 105.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,015.95' / 2,008.00' S= 0.0757 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=19.04 cfs @ 12.09 hrs HW=2,019.44' TW=1,986.51' (Dynamic Tailwater)
1=Culvert (Inlet Controls 19.04 cfs @ 7.77 fps)

Summary for Pond C5C: (new Pond)

Inflow Area = 4.259 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 9.51 cfs @ 12.27 hrs, Volume= 0.922 af
Outflow = 9.51 cfs @ 12.27 hrs, Volume= 0.922 af, Atten= 0%, Lag= 0.0 min
Primary = 9.51 cfs @ 12.27 hrs, Volume= 0.922 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,038.22' @ 12.27 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 184.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,015.95' S= 0.1062 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=9.50 cfs @ 12.27 hrs HW=2,038.21' TW=2,018.29' (Dynamic Tailwater)
1=Culvert (Inlet Controls 9.50 cfs @ 6.89 fps)

Summary for Pond C6B: (new Pond)

Inflow Area = 6.140 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 20.02 cfs @ 12.10 hrs, Volume= 1.329 af
Outflow = 20.02 cfs @ 12.10 hrs, Volume= 1.329 af, Atten= 0%, Lag= 0.0 min
Primary = 20.02 cfs @ 12.10 hrs, Volume= 1.329 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,015.82' @ 12.10 hrs
Flood Elev= 2,016.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,012.07'	**21.2" Round Culvert** L= 102.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,012.07' / 2,004.00' S= 0.0791 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=19.68 cfs @ 12.10 hrs HW=2,015.73' TW=1,978.78' (Dynamic Tailwater)
1=Culvert (Inlet Controls 19.68 cfs @ 8.03 fps)

Summary for Pond C6C: (new Pond)

Inflow Area = 3.292 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 8.62 cfs @ 12.21 hrs, Volume= 0.713 af
Outflow = 8.62 cfs @ 12.21 hrs, Volume= 0.713 af, Atten= 0%, Lag= 0.0 min
Primary = 8.62 cfs @ 12.21 hrs, Volume= 0.713 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,037.85' @ 12.21 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 202.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,012.07' S= 0.1160 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=8.60 cfs @ 12.21 hrs HW=2,037.84' TW=2,014.65' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.60 cfs @ 6.24 fps)

Summary for Pond C7B: (new Pond)

Inflow Area = 3.747 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 15.40 cfs @ 12.10 hrs, Volume= 0.811 af
Outflow = 15.40 cfs @ 12.10 hrs, Volume= 0.811 af, Atten= 0%, Lag= 0.0 min
Primary = 15.40 cfs @ 12.10 hrs, Volume= 0.811 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,010.85' @ 12.10 hrs
Flood Elev= 2,012.77'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,008.27'	**21.2" Round Culvert** L= 115.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,008.27' / 2,000.00' S= 0.0719 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.45 sf

Primary OutFlow Max=15.07 cfs @ 12.10 hrs HW=2,010.78' TW=1,981.56' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 15.07 cfs @ 6.15 fps)

Summary for Pond C7C: (new Pond)

Inflow Area = 1.265 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 5.10 cfs @ 12.11 hrs, Volume= 0.274 af
Outflow = 5.10 cfs @ 12.11 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.0 min
Primary = 5.10 cfs @ 12.11 hrs, Volume= 0.274 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,036.74' @ 12.11 hrs
Flood Elev= 2,040.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.50'	**15.9" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.50' / 2,008.27' S= 0.1076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=5.05 cfs @ 12.11 hrs HW=2,036.73' TW=2,010.78' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.05 cfs @ 3.78 fps)

Summary for Pond C8B: (new Pond)

Inflow Area = 1.815 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 6.69 cfs @ 12.14 hrs, Volume= 0.393 af
Outflow = 6.69 cfs @ 12.14 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.0 min
Primary = 6.69 cfs @ 12.14 hrs, Volume= 0.393 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 2,010.02' @ 12.14 hrs
Flood Elev= 2,012.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,008.34'	**15.9" Round Culvert** L= 146.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,008.34' / 2,000.00' S= 0.0571 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.38 sf

Primary OutFlow Max=6.63 cfs @ 12.14 hrs HW=2,010.00' TW=1,987.83' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.63 cfs @ 4.81 fps)

Summary for Pond MH1: Drop MH

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 18.64 cfs @ 12.11 hrs, Volume= 1.127 af
Outflow = 18.64 cfs @ 12.11 hrs, Volume= 1.127 af, Atten= 0%, Lag= 0.0 min
Primary = 18.64 cfs @ 12.11 hrs, Volume= 1.127 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,990.07' @ 12.11 hrs
Flood Elev= 2,007.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,986.00'	**30.0" Round Culvert** L= 161.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,986.00' / 1,986.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=18.43 cfs @ 12.11 hrs HW=1,990.03' TW=1,982.82' (Dynamic Tailwater)
1=Culvert (Barrel Controls 18.43 cfs @ 3.75 fps)

Summary for Pond MH2: (new Pond)

Inflow Area = 9.454 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 25.29 cfs @ 12.24 hrs, Volume= 2.046 af
Outflow = 25.29 cfs @ 12.24 hrs, Volume= 2.046 af, Atten= 0%, Lag= 0.0 min
Primary = 25.29 cfs @ 12.24 hrs, Volume= 2.046 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,957.77' @ 12.24 hrs
Flood Elev= 1,980.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,952.00'	**30.0" Round Culvert** L= 188.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,952.00' / 1,952.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=25.23 cfs @ 12.24 hrs HW=1,957.76' TW=1,953.07' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 25.23 cfs @ 5.14 fps)

Summary for Pond MH3: (new Pond)

Inflow Area = 4.749 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 10.86 cfs @ 12.29 hrs, Volume= 1.028 af
Outflow = 10.86 cfs @ 12.29 hrs, Volume= 1.028 af, Atten= 0%, Lag= 0.0 min
Primary = 10.86 cfs @ 12.29 hrs, Volume= 1.028 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,956.78' @ 12.29 hrs
Flood Elev= 1,986.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,954.00'	**30.0" Round Culvert** L= 218.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,954.00' / 1,954.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=10.85 cfs @ 12.29 hrs HW=1,956.78' TW=1,954.82' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 10.85 cfs @ 2.48 fps)

Summary for Pond MH4: (new Pond)

Inflow Area = 5.024 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 16.86 cfs @ 12.09 hrs, Volume= 1.088 af
Outflow = 16.86 cfs @ 12.09 hrs, Volume= 1.088 af, Atten= 0%, Lag= 0.0 min
Primary = 16.86 cfs @ 12.09 hrs, Volume= 1.088 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,999.51' @ 12.09 hrs
Flood Elev= 2,010.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,996.10'	**30.0" Round Culvert** L= 102.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,996.10' / 1,996.10' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=16.39 cfs @ 12.09 hrs HW=1,999.42' TW=1,996.81' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 16.39 cfs @ 3.34 fps)

Summary for Pond MH5: (new Pond)

Inflow Area = 6.867 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 19.39 cfs @ 12.09 hrs, Volume= 1.487 af
Outflow = 19.39 cfs @ 12.09 hrs, Volume= 1.487 af, Atten= 0%, Lag= 0.0 min
Primary = 19.39 cfs @ 12.09 hrs, Volume= 1.487 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,986.58' @ 12.09 hrs
Flood Elev= 2,012.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,982.00'	**30.0" Round Culvert** L= 207.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,982.00' / 1,982.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=19.04 cfs @ 12.09 hrs HW=1,986.51' TW=1,982.89' (Dynamic Tailwater)
1=Culvert (Barrel Controls 19.04 cfs @ 3.88 fps)

Summary for Pond MH6: (new Pond)

Inflow Area = 6.140 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 20.02 cfs @ 12.10 hrs, Volume= 1.329 af
Outflow = 20.02 cfs @ 12.10 hrs, Volume= 1.329 af, Atten= 0%, Lag= 0.0 min
Primary = 20.02 cfs @ 12.10 hrs, Volume= 1.329 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,978.85' @ 12.10 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,974.00'	**30.0" Round Culvert** L= 223.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,974.00' / 1,974.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=19.68 cfs @ 12.10 hrs HW=1,978.78' TW=1,970.82' (Dynamic Tailwater)
1=Culvert (Barrel Controls 19.68 cfs @ 4.01 fps)

Summary for Pond MH7: (new Pond)

Inflow Area = 3.747 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 15.40 cfs @ 12.10 hrs, Volume= 0.811 af
Outflow = 15.40 cfs @ 12.10 hrs, Volume= 0.811 af, Atten= 0%, Lag= 0.0 min
Primary = 15.40 cfs @ 12.10 hrs, Volume= 0.811 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,981.65' @ 12.10 hrs
Flood Elev= 2,004.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,978.00'	**30.0" Round Culvert** L= 168.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,978.00' / 1,978.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=15.07 cfs @ 12.10 hrs HW=1,981.56' TW=1,978.99' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 15.07 cfs @ 3.07 fps)

Summary for Pond MH8: (new Pond)

Inflow Area = 1.815 ac, 0.00% Impervious, Inflow Depth = 2.60" for 100-yr event
Inflow = 6.69 cfs @ 12.14 hrs, Volume= 0.393 af
Outflow = 6.69 cfs @ 12.14 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.0 min
Primary = 6.69 cfs @ 12.14 hrs, Volume= 0.393 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,987.84' @ 12.14 hrs
Flood Elev= 2,004.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,986.00'	**30.0" Round Culvert** L= 113.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,986.00' / 1,986.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf

Primary OutFlow Max=6.63 cfs @ 12.14 hrs HW=1,987.83' TW=1,986.22' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 6.63 cfs @ 2.41 fps)

Summary for Pond NWMH: (new Pond)

Inflow Area = 43.097 ac, 0.00% Impervious, Inflow Depth > 2.05" for 100-yr event
Inflow = 4.96 cfs @ 14.80 hrs, Volume= 7.358 af
Outflow = 4.96 cfs @ 14.80 hrs, Volume= 7.358 af, Atten= 0%, Lag= 0.0 min
Primary = 4.96 cfs @ 14.80 hrs, Volume= 7.358 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,971.10' @ 14.80 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**18.0" Round Culvert** L= 24.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,970.00' / 1,968.00' S= 0.0833 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=4.96 cfs @ 14.80 hrs HW=1,971.10' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.96 cfs @ 3.57 fps)

Summary for Pond SEMH: (new Pond)

Inflow Area = 54.642 ac, 0.00% Impervious, Inflow Depth > 2.43" for 100-yr event
Inflow = 8.20 cfs @ 14.07 hrs, Volume= 11.046 af
Outflow = 8.20 cfs @ 14.07 hrs, Volume= 11.046 af, Atten= 0%, Lag= 0.0 min
Primary = 8.20 cfs @ 14.07 hrs, Volume= 11.046 af

Routing by Dyn-Stor-Ind method, Time Span= 3.00-35.00 hrs, dt= 0.04 hrs / 3
Peak Elev= 1,926.19' @ 14.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,924.00'	**24.0" Round Culvert** L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,924.00' / 1,924.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=8.20 cfs @ 14.07 hrs HW=1,926.19' (Free Discharge)
1=Culvert (Barrel Controls 8.20 cfs @ 2.97 fps)

CARLSON McCAIN

ENGINEERING \ LAND SURVEYING \ ENVIRONMENTAL

April 27, 2021

Ms. Diana Trussell
North Dakota Dept. of Environmental Quality
Division of Waste Management
918 East Divide Avenue
Bismarck, ND 58501-1947

RE: DB Waste
Closure Plan

Dear Ms. Trussell:

In cooperation with Division of Solid Waste staff, we have determined that there are no existing records that certify that any of the DB Waste facility units have been certified as closed. The DB Waste facility consists of several, old inert waste cells and one old municipal solid waste cell. These cells are no longer used for waste disposal; however, certain parts of the facility operation(s) are conducted on portions of these cells.

Figure 1 represents, to the best of our knowledge, the location and approximate acreage of the old cells and existing facility. Areas 1-7 are old inert waste cells. Areas 1, 2, 3, 7, and 8 have not been used for some time. The tire reclyding facility and parking area are located over Areas 4, 5, and 6. These areas encompass 27.91 acres. I would submit that these areas be certified as closed as there are no plans to place additionall waste, they are well vegetated, and/or structures are built on them. Additional work in these areas to place, or remove soil, would cause more damage than leaving them in their existing state.

I would also like to submit that the "Old Municipal Area" (11.9 acres) is closed. My recollection of correspondence with previous Division of Solid Waste Staff is that, in their opinion, this area had sufficient cover soils and no additional work was needed. This area is; however, being used for current operations (e.g.; soil stockpiles, equipment parking, site access). When the current active area is full (sometime in 2021), unvegetated areas of the Old Municipal Area would be covered with topsoil and seeded as part of the closure of the current active area.

Closure activities in 2021 would occure across the area designated as "Closure Area 2021". DB Waste operators have indicated that they placed subsoil and topsoil across this area in 2020. The thickness of the soil layers was not verified, however. We have contracted Prairie Soils Consulting, to perform a thickness evaluation of the soil layers. This will be done in May 2021.

The cover requirement of the landfill is four feet of uncompacted soils and six feet of topsoil. The cover evaluation would consist of advnancing a soil prove to five feet or to waste. This would determine if adequate cover soils are present. A soil sampling grid is presented is Figure 2. The Division of Solid Waste will be notified of the results of the cover evaluation.

If adequate cover soils are present, Carlson McCain will present a report indicating the results of the cover evaluation and certifying this area as closed. If adequate cover soils are not present, DB Waste will amend the soil thickness(es) to meet cover requirements. This area would then be certified as close. The access road that proceeds over the top of the land fill would remain, as this is needed for access to the new disposal area to the west of the existing facility.

The area labed as "Intermediate Cover Area" has at least two feet of soil cover and is at final waste grades. However, it is currently being used for soil stockpile storage and site access. We request that this area be left "as is" until the active cell is closed (again, later in 2021). At that time, subsoil thickness would be verified, topsoil placed, and the area would be seeded as part of the active area closure.

DB Waste continues to reduce the size of the active area. It is anticipated that the active cell will be full in late 2021 and waste disposal would be moved to new cells located west of the existing facility. The Division of Solid Waste will be notified prior to closure of the active cell. Closure activities will be conducted in accordance with the applicable regulations.

Please contact me at 701-595-7001 if you have any questions or need additional information.

Sincerely,

Todd Hartleben
Principal Engineer

Attachment: Figures 1 and 2

R:\Templates 2020\Letterhead_Bismarck multiple pages.docx

N

0 100 200 400

Scale in Feet

LEGEND

COVER - 401,138 SF - 9.21 AC

OPEN AREA - 181,806 SF - 4.17 AC

NOTES

1. Existing contours shown were derived from LIDAR data from the North Dakota SWC flown in 2009 and supplemented with additional field topography shot in April, 2013 and May, 2020
2. Aerial Orthophotos shown are from 2012.

CLOSURE AREA 2021
14.92 ACRES

Closed Cell

INTERMEDIATE COVER
AREA
3.07 ACRES

ACTIVE CELL
4.17 ACRES
28,900 CY
REMAINING
AIRSPACE

OLD
MUNICIPAL
AREA
11.9 ACRES

Old Municipal Waste Site

Old Site InertWaste

CLOSED
AREA 8
9.21 ACRES

CLOSED
AREA 7
4.6 ACRES

Old Site Inert Waste

CLOSED
AREA 3
1.1 ACRES

Old Site Inert Waste

CLOSED
AREA 2
1.2 ACRES

CLOSED
AREA 1
7.6 ACRES

Old Site InertWaste

CLOSED
AREA 4
0.9 ACRES

Old Landfill Site

CLOSED
AREA 6
1.3 ACRES

Bad Weather Cells

Old Site Inert Waste

CLOSED
AREA 5
2.0 ACRES

34th Street NW

Carlson McCain
ENVIRONMENTAL · ENGINEERING · SURVEYING
600 S. 2ND ST., SUITE 105, BISMARCK, ND 58504
PHONE: 701-255-1475 FAX: 701-255-1477

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of North Dakota.

Todd Hartleben

Date _____ Reg. No. 5659

DB WASTE, LLC
311 South 7th St.
Bismarck, North Dakota, 58501

D.B. WASTE
INERT WASTE FACILITY
Burleigh County, North Dakota

CURRENT LANDFILL OPERATING CONDITION

1 of 2

Save Date: 04/21/21 r:\projects\4440-5000\4375 - db waste\survey\2020 merged topo.dwg

N

0 100 200 400

Scale in Feet

LEGEND

COVER - 401,138 SF - 9.21 AC

OPEN AREA - 181,806 SF - 4.17 AC

1000 FINAL COVER THICKNESS VERIFICATION POINT

NOTES

1. Existing contours shown were derived from LIDAR data and field topography.
2. Aerial Orthophotos shown are from 2012.
3. Contours in the Original Landfill Area are from surveys performed in 2021 & 2020.

1000 1002 1004 1006 1010 1012 1014 1016 1018 1020 1022 1024 1026 1028 1030 1032 1034 1036 1038 1040 1042 1044 1046 1048 1050 1052 1054 1056 1058 1060 1062 1064

CLOSED AREA USED FOR ACCESS

Old Municipal Waste Site

Old Site InertWaste

Old Site Inert Waste

Old Landfill Site

Bad Weather Cells

EXISTING BUILDING

34th Street NW

Old Site InertWaste

Old Site Inert Waste

Old Site Inert Waste

2010 2000 1990 1980 1970 1960 1950 1940 1930 2040 2030 2020

Save Date: 04/21/21 r:\projects\4440-5000\4375 - db waste\survey\2020 merged topo.dwg

Carlson McCain
ENVIRONMENTAL · ENGINEERING · SURVEYING
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PHONE: 701-255-1475 FAX: 701-255-1477

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Todd Hartleben

Date _____ Reg. No. 5659

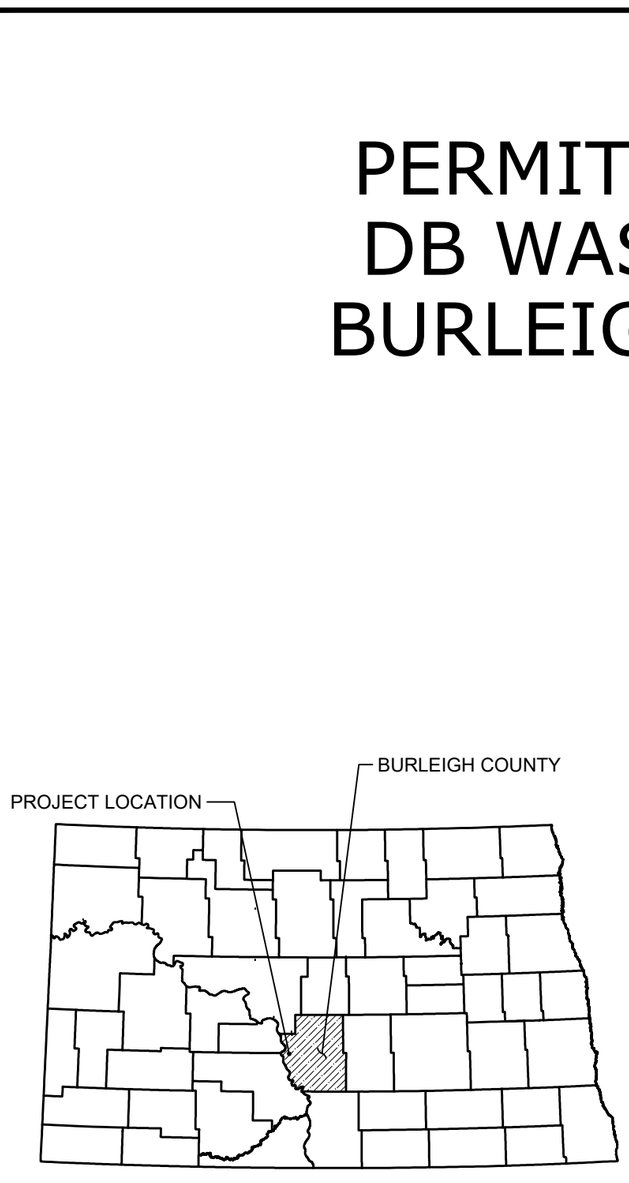
DB WASTE, LLC
311 South 7th St.
Bismarck, North Dakota, 58501

D.B. WASTE
INERT WASTE FACILITY
Burleigh County, North Dakota

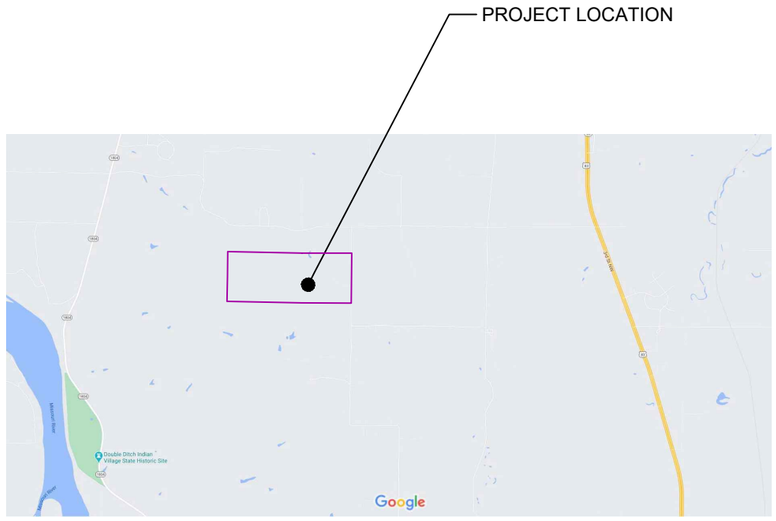
SOIL SAMPLE GRID

PERMIT MODIFICATION DRAWINGS
DB WASTE INERT WASTE FACILITY
BURLEIGH COUNTY, NORTH DAKOTA

DB WASTE, LLC
311 SOUTH 7TH STREET
BISMARCK, ND 58501



STATE MAP



VICINITY MAP

CARLSON McCAIN
ENGINEERING SURVEYING ENVIRONMENTAL
15650 36TH AVE N
SUITE 110
PLYMOUTH, MN 55446
TEL (952) 346-3900
FAX (952) 346-3901
CARLSONMCCAIN.COM

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of North Dakota

Print Name: Dan J. Wilke
Signature:
Date: 12/20/2020 License #: PE-10813

Drawn: DJW
Designed: DJW
Date: 12/20/20

REV	DATE	BY	DESCRIPTION

DB WASTE, LLC
311 SOUTH 7TH STREET
BISMARCK, ND 58501

DB WASTE INERT WASTE FACILITY
BURLEIGH COUNTY, ND

COVER SHEET
PERMIT MODIFICATION DRAWINGS

RANDOM FILL STOCKPILE

TOPSOIL STOCKPILE

STORMWATER POND

EXISTING LANDFILL

TOPSOIL STOCKPILE

STORMWATER POND

LEGEND

- 2400 — EXISTING CONTOUR IDX
- EXISTING CONTOUR INT
- WL — WL — WASTE LIMIT
- PROP — PERMIT/PROPERTY BOUNDARY
- x — x — FENCE

N

0 100 200 400

SCALE IN FEET

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Signature:

Date: 12/20/2020 License #: PE-10813

Drawn: DJW

Designed: DJW

Date: 12/20/20

REV.	DATE	BY	DESCRIPTION

DB WASTE, LLC
311 SOUTH 7TH STREET
BISMARCK, ND 58501

DB WASTE INERT WASTE FACILITY
BURLEIGH COUNTY, ND

EXISTING CONDITIONS
PERMIT MODIFICATION DRAWINGS

LEGEND

- 2400 — EXISTING CONTOUR IDX
- EXISTING CONTOUR INT
- 2400 — PROPOSED CONTOUR IDX
- PROPOSED CONTOUR INT
- WL — WASTE LIMIT
- PROP — PERMIT/PROPERTY BOUNDARY
- CB — CELL BOUNDARIES

N

0 50 100 150 300
SCALE IN FEET

RANDOM FILL STOCKPILE

STORMWATER POND

TOPSOIL STOCKPILE

EXISTING LANDFILL

CELL 1

CELL 2

CELL 3

CELL 4

CELL 5

CELL 6

CELL 7

CELL 8

CELL 9

TOPSOIL STOCKPILE

STORMWATER POND

CARLSON McCAIN
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Signature:
Date: 12/20/2020 License #: PE-10813

Drawn: DJW
Designed: DJW
Date: 12/20/20

REV	DATE	BY	DESCRIPTION

DB WASTE, LLC
311 SOUTH 7TH STREET
BISMARCK, ND 58501

DB WASTE INERT WASTE FACILITY
BURLEIGH COUNTY, ND

CELL GRADING PLAN
PERMIT MODIFICATION DRAWINGS

LEGEND

- 2400 — EXISTING CONTOUR IDX
- EXISTING CONTOUR INT
- 2400 — FINAL COVER IDX
- FINAL COVER INT
- >>> — DITCH FLOW LINE
- SW — SW — PROPOSED DROP PIPE/CULVERT
- WL — WL — WASTE LIMIT
- PROP — PERMIT/PROPERTY BOUNDARY

N

0 50 100 150 300
SCALE IN FEET

RANDOM FILL STOCKPILE

STORMWATER POND

RIPRAP FROM OUTLET TO POND FLOOR

TOPSOIL STOCKPILE

TOPSOIL STOCKPILE

EXISTING LANDFILL

STORMWATER POND

1/8 1/10 1/8 1/6 1/8 1/7 2/10

CARLSON McCAIN
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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of North Dakota

Print Name: Dan J. Wilke
Signature:
Date: 12/20/2020 License #: PE-10813

Drawn: DJW
Designed: DJW
Date: 12/20/20

REV.	DATE	BY	DESCRIPTION

DB WASTE, LLC
311 SOUTH 7TH STREET
BISMARCK, ND 58501

DB WASTE INERT WASTE FACILITY
BURLEIGH COUNTY, ND

FINAL COVER GRADING PLAN
PERMIT MODIFICATION DRAWINGS

LEGEND

- 2400 — EXISTING CONTOUR IDX
- EXISTING CONTOUR INT
- 2400 — FINAL COVER IDX
- FINAL COVER INT
- >>> — DITCH FLOW LINE
- SW — SW — PROPOSED DROP PIPE/CULVERT
- WL — WL — WASTE LIMIT
- PROP — PERMIT/PROPERTY BOUNDARY
- STORMWATER CATCHMENT

N

0 50 100 150 300
SCALE IN FEET

RANDOM FILL STOCKPILE

STORMWATER POND

RIPRAP FROM OUTLET TO POND FLOOR

TOPSOIL STOCKPILE

TOPSOIL STOCKPILE

EXISTING LANDFILL

STORMWATER POND

1A 1B 1C 2A 2B 2C 3A 3B 4A 4B 4C 5A 5B 5C 6A 6B 6C 7A 7B 7C 8A 8B 9A 10A 11A

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FAX (952) 346-3901
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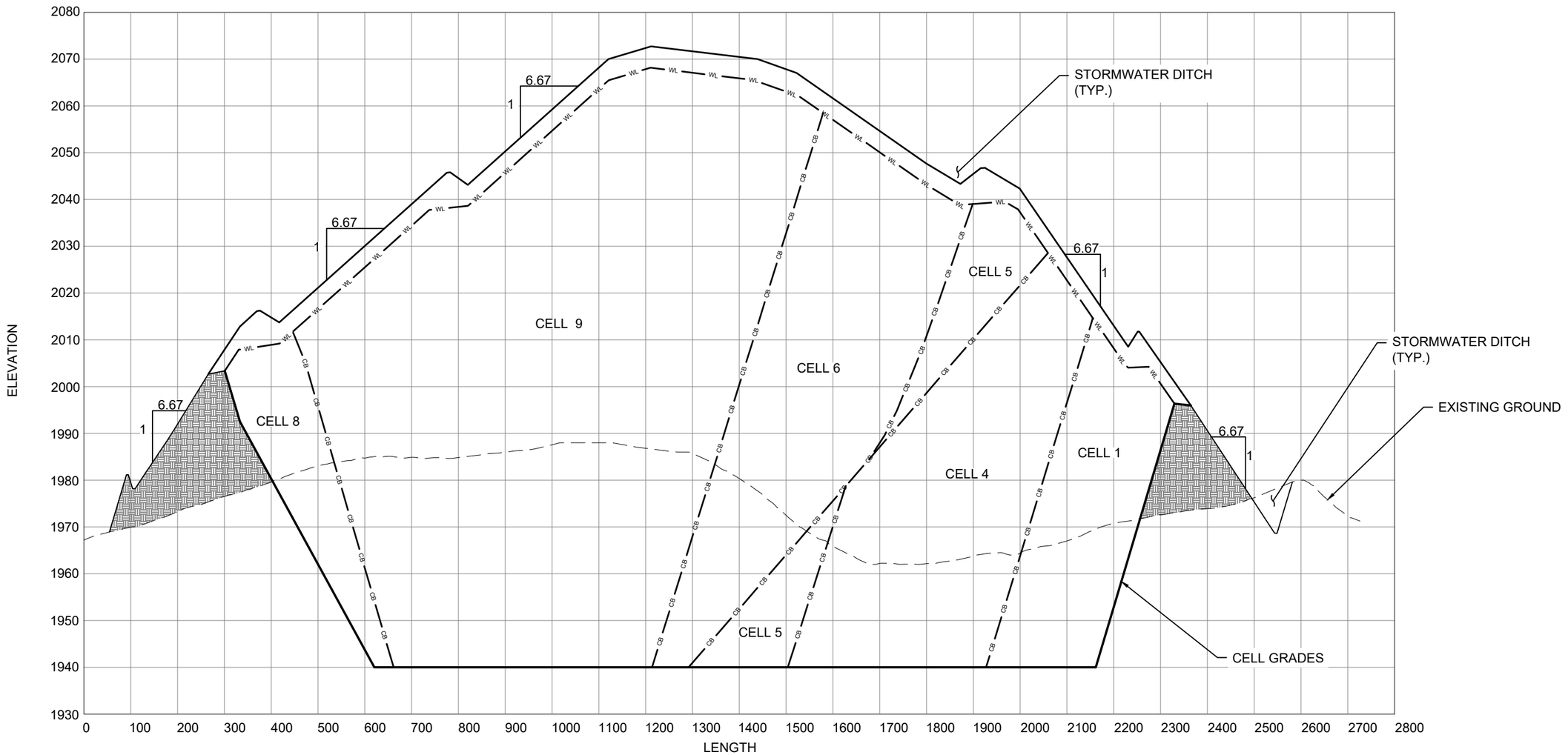
STORMWATER MANAGEMENT PLAN
PERMIT MODIFICATION DRAWINGS



1/4 SECTION: SITE CROSS SECTION WEST/EAST

0 60 120 240

SCALE IN FEET

VERTICAL EXAGGERATION: 10x

LEGEND

WL WL — WASTE LIMIT

CB CB — CELL BOUNDARY

WATER LEVEL

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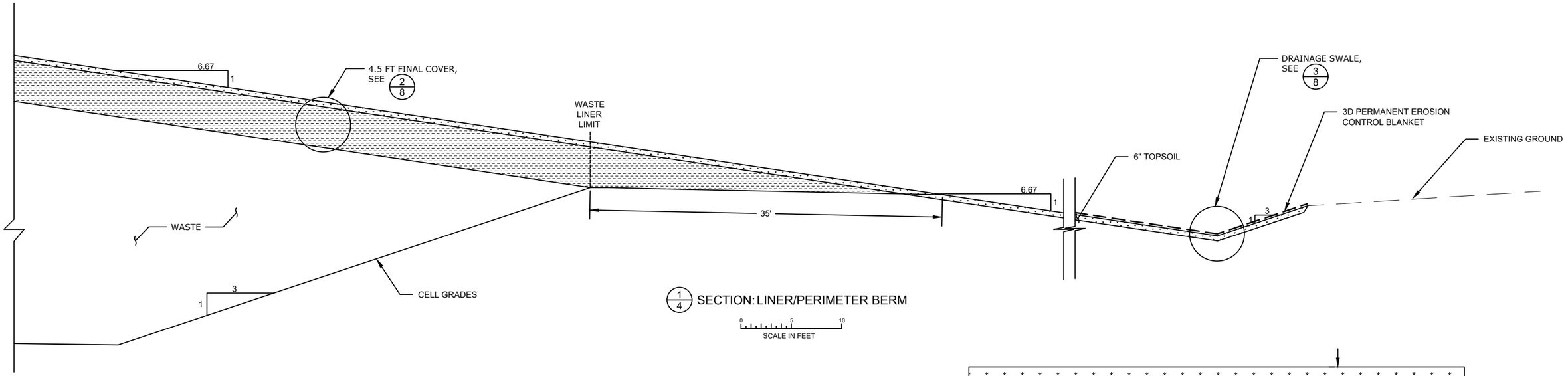
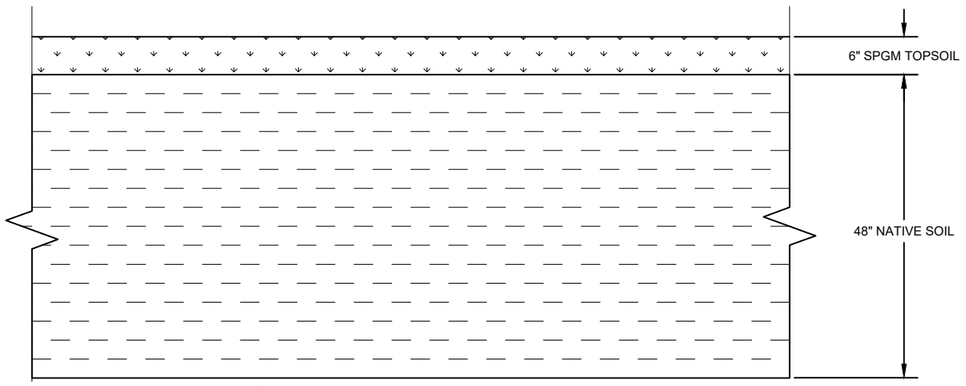
SITE CROSS SECTION W-E
PERMIT MODIFICATION DRAWINGS



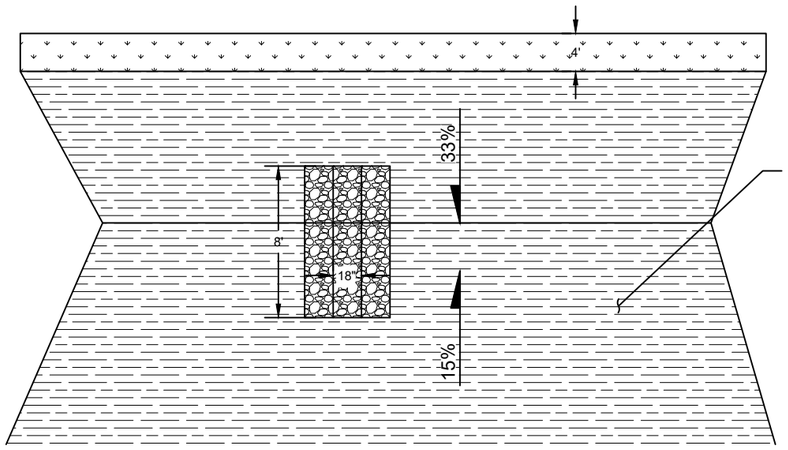
1/4 SECTION: LINER/PERIMETER BERM

SCALE IN FEET 0 5 10



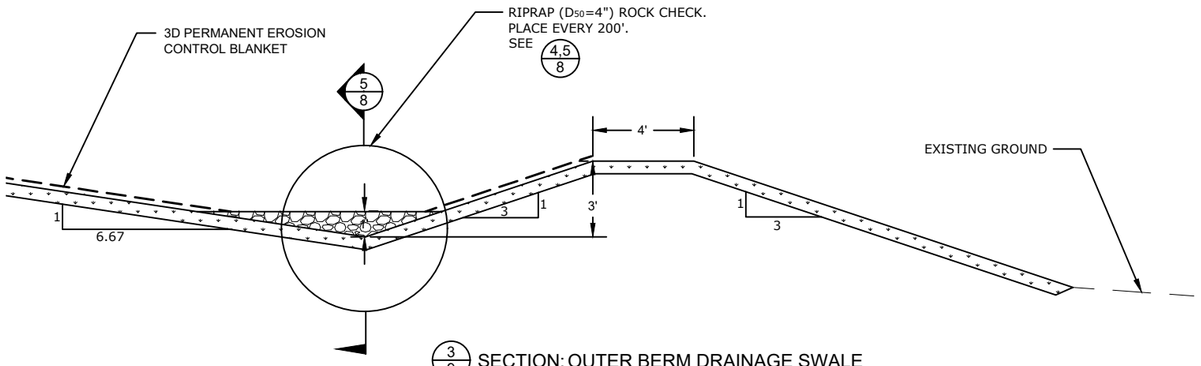
2/8.9 SECTION: FINAL COVER PROFILE

SCALE IN FEET 0 0.5 1.0 2.0



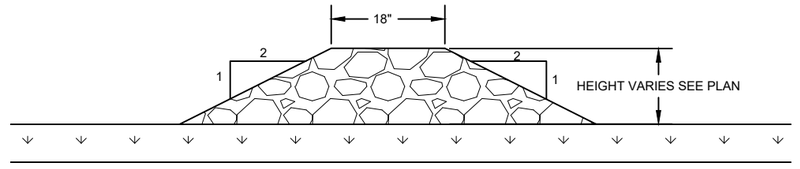
4/8 PLAN: OUTER BERM DRAINAGE SWALE ROCK CHECK

SCALE IN FEET 0 2.0 4.0 8.0



3/9 SECTION: OUTER BERM DRAINAGE SWALE

SCALE IN FEET 0 1.5 3.0 6.0



5/8 PROFILE: OUTER BERM DRAINAGE SWALE ROCK CHECK

SCALE IN FEET 0 0.5 1.0 2.0

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SECTIONS & DETAILS
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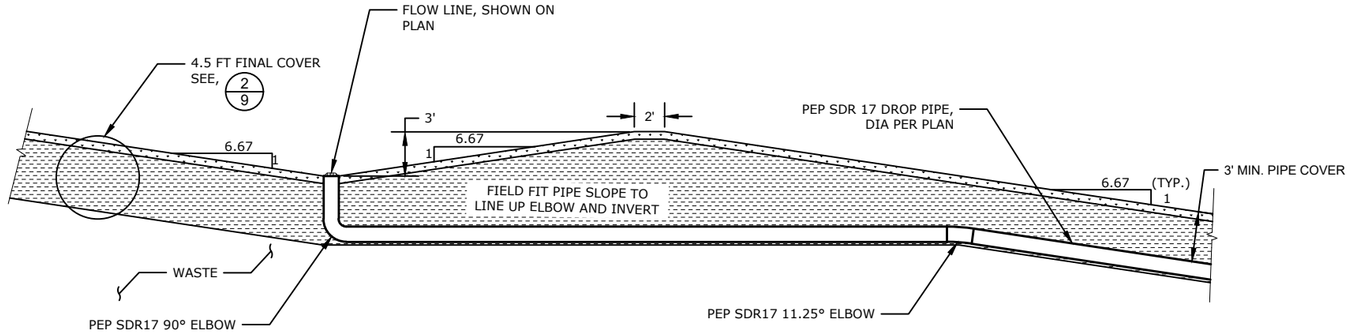
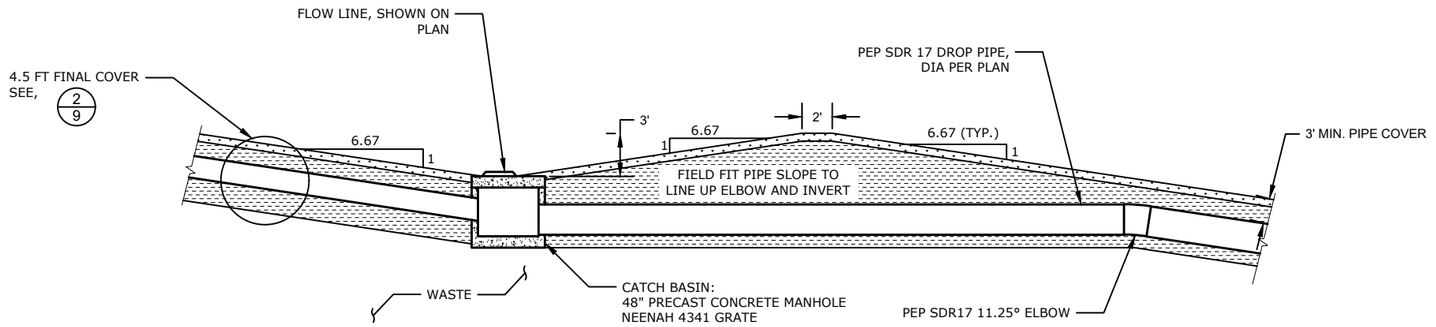


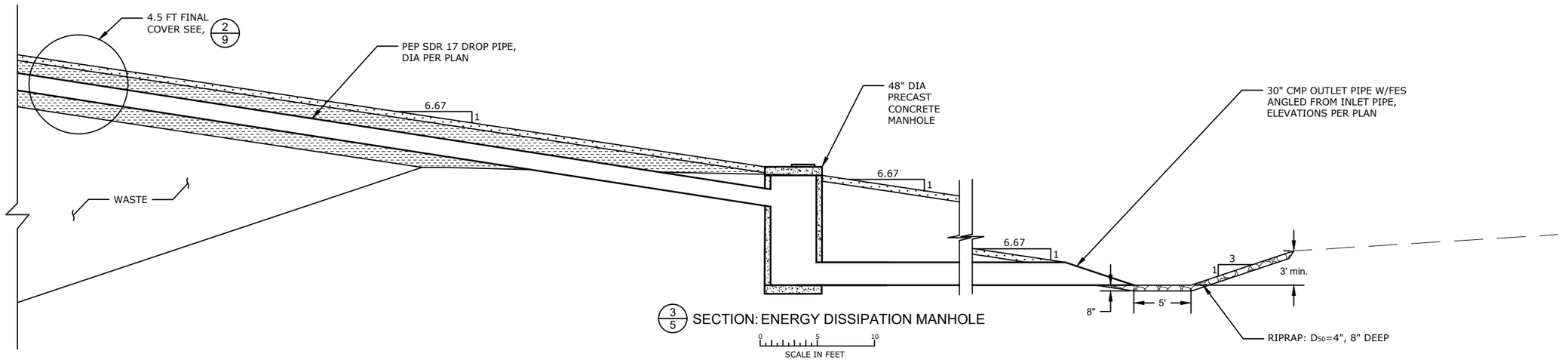
1/5 SECTION: UPPER STORMWATER CATCH BASIN AND DROP PIPE

0 5 10
SCALE IN FEET



2/5 SECTION: MIDDLE & LOWER STORMWATER CATCH BASIN AND DROP PIPE

0 5 10
SCALE IN FEET



3/5 SECTION: ENERGY DISSIPATION MANHOLE

0 5 10
SCALE IN FEET

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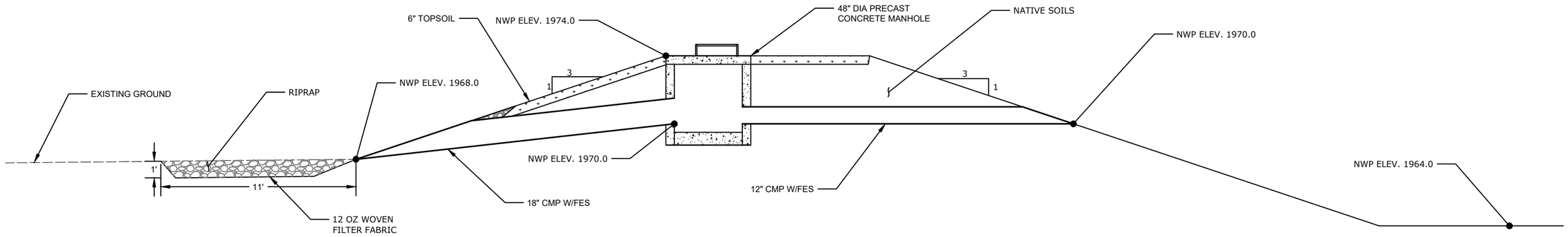
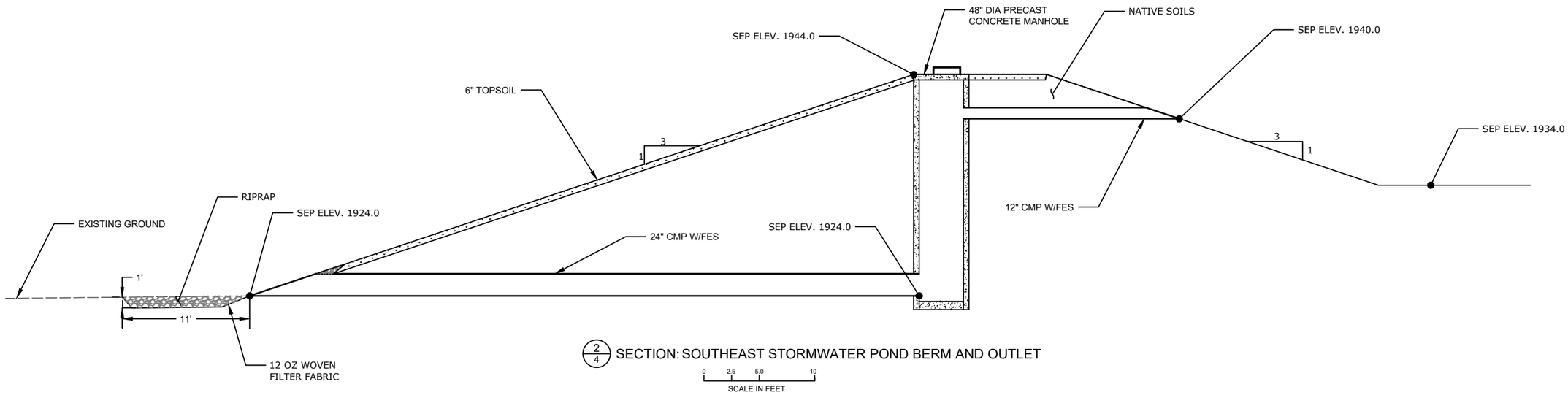


1/4 SECTION: NORTHWEST STORMWATER POND BERM AND OUTLET

0 1.5 3.0 6.0
SCALE IN FEET



2/4 SECTION: SOUTHEAST STORMWATER POND BERM AND OUTLET

0 2.5 5.0 10
SCALE IN FEET

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